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The Automobile

Old Trails National Highway New York to San Francisco

Tale of Interesting Trip Following Famous Historic Santa Fé, Boons-Lick and Cumberland Pike Trails

Cross and Cairn Where a Pioneer Fell

In Arizona, Traveling Was Often Hard

Money Subscribed Along Route to Improve Local Sections — Activity General Across Entire Country

By BERT C. SMITH

THREE-thousand three hundred and fifty-nine miles, the shortest route ever found from the Pacific to the Atlantic, has been completed by an automobile and the route for the proposed national highway has been crosen. Over a road stretching through fifteen states a four-cylinder, 60-horsepower machine was driven in 60 days. This route is the one selected by the Good Roads convention at Phoenix, Ariz., and later by the convention in Kansas City, Mo.

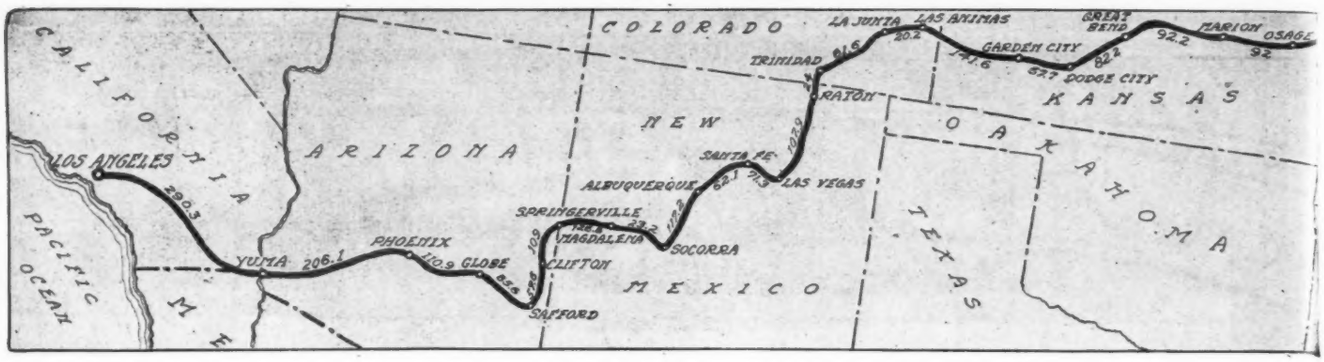
It is one thing to select a transcontinental course and entirely another to drive an automobile over the roads chosen. In order to make the ocean-to-ocean tour a success, it was necessary to cover every foot of the route. On the morning of May 15 the machine was driven out of Los Angeles, Cal., for the ocean-to-ocean tour. Many thought it would be foolish to try and cover the direct route of the Santa Fé trail, the Boons-Lick road and the Cumberland Pike.

The first day's run was through the orange groves of southern California with a night stop at the Glenwood Inn. Here Frank Miller was host. He is one of the greatest good roads boosters in California and before the Times Special left the Mission Inn, Mr. Miller secured two bronze bears which were mounted on the big headlights. He also gave a Mission bell, which was placed on the cowl of the machine.

When the bears were hammered into place they were fixed as an ornament. As the road-scarred machine was driven across the country, however, these became distinctive signs of California and proved as interesting to the highway boosters along the route as any part of the equipment of the car.

Equipped with oversize 37 by 5 1-2-inch tires, the car attracted attention in every village and hamlet. These tires were used in preparation for a fight with the desert sands, but this fight was only a joke as the roads on the Arizona desert are far better than those we found in Maryland.

Our real sand fight, however, came in the Mammoth Wash in



Map showing shortest automobile route yet discovered between the Atlantic and Pacific oceans.—It is 3359 miles and crosses nine distinct

California. Here it was low-gear work for 5 miles and we were forced to deflate our tires. They were not pumped up until we were 20 miles from Yuma. We rolled into the Colorado River city at dusk and were greeted with red fires in the streets and with a band. Here we found the people more than anxious to do their part to help build a national highway. Though there are only a few machines in the city of Yuma, the farmers and merchants there raised $1,000 to begin work at once on the highway through their section.

Water Bottles Indispensable

Leaving Yuma at 5 o'clock in the morning we started a drive of 206 miles over an arid country having no water to speak of. The equipment for this trip consisted of two immense African water bottles and it was well that we carried these. The heat was terrific. It registered at one place on the desert 132 degrees. This does not mean in the shade, of course, as there is no shade.

Soon after leaving Deep Wells, a place that is misnamed, as the wells are dry, we saw an object on the sands that looked much like a coyote. Preparing to run the animal down, John Zak, the driver, was asked to send the car as fast as possible toward the brute. As we neared the object we could see it was not a coyote, but a man on his hands and knees. Opening the throttle, we reached him and found A. E. Weeks, of Whittier, Cal., almost delirious from exposure and lack of water.

Weeks had undertaken to ride a motorcycle across the desert ahead of our car. Seeing the attention the start of the ocean-to-ocean tour had been given by the newspapers, Weeks thought it would be a good stunt to ride a machine across the sands. When we found him he was 80 miles from the nearest water and would have died, according to physicians, had he not been rescued. We carried rim to Phoenix, but were forced to leave his machine on the sands of the lonely desert.

Governor Hunt of Arizona welcomed us in Phoenix, and there we found the sentiment strongly in favor of a national boulevard from the Pacific to the Atlantic. The men of the city raised $2,000 and promised $5,000 additional and plans were made to sign the desert and to put the roads in shape for touring. Here was started a movement which should mean that the highway will be tourable from New York to San Francisco at least a year before the opening of the World's Fair in the Bay City.

From Phoenix, our route took us out to the Roosevelt Dam country by way of Mesa and Tempe. The roads here are excellent. It is an easy matter to drive from Arizona to Roosevelt and then on to Globe, a distance of 109 miles. Though the country is hilly, the grades are not severe or dangerous and the scenery is grand. This part of the tour is most interesting.

From Globe we drove to Safford, a town in the fertile section of Arizona, where the good roads movement is such that the people of Thatcher, a city 6 miles away, journeyed into Safford for an evening meeting and expressed a desire to begin work at once on a national highway. This sentiment was so strong that several automobilists agreed to pilot us on into Clifton, the home of Col. Dell M. Potter, national organizer for the Ocean-to-Ocean Highway Association, under whose auspices the tour was made. Colonel Potter made the transcontinental trip and organized divisions of the Ocean-to-Ocean Highway Association in each of the larger cities.

At Clifton, the townspeople turned out to greet us and a meeting was called at once. This rock-ribbed city is perched on the side of the high hills which have enough copper in them to make the mine owners certain of running treir smelters for another 100 years. This country is sorely in need of roads and at the town of Morenci, a city without a main street, the people again raised $2,000 to help stir up interest in a national highway from sea to sea.

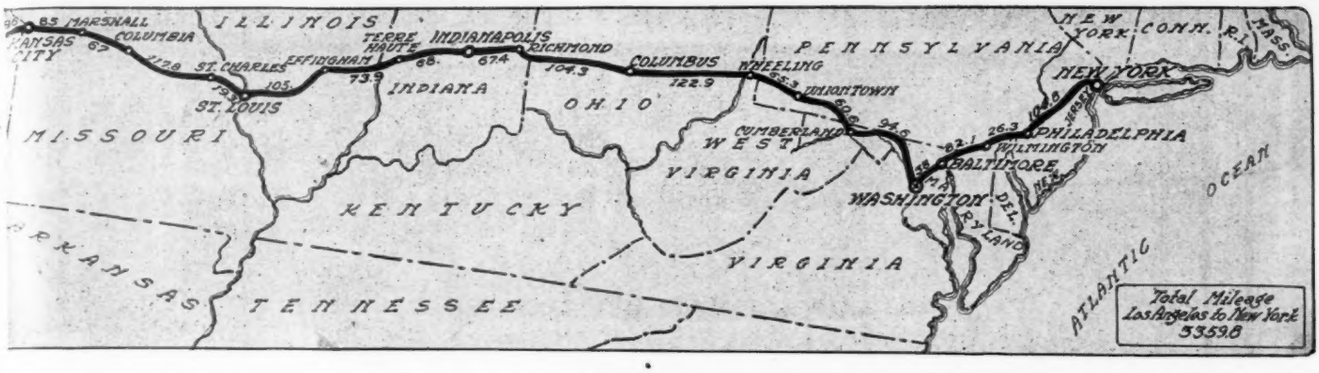
Though we were warned to leave all hope behind as we struck off into the Rocky Mountains to find the shortest route to Springerville, we started without many misgivings. We did examine our brakes, but what followed proved we were not careful enough. This transcontinental journey was to become epoch-making, but we were content to make it in easy stages. Forcing the car toward the high hills we started for the White River Indian reservation.

Indians Dislike Open Exhaust

At the San Carlos River we took observations. The roads are not good, but can be toured over easily. We visited the Apache Indian school and found the young bucks willing to approach the car, but the old warriors refused to approach the machine. The open exhaust was too much for them, though they did not even show surprise as the motor barked angrily. The red men, however, especially the younger ones, showed a keen interest in the preparation for improving the roads and several volunteered to work on the road graders which have been ordered and which will be put into active use at once. In fact, one scraper had arrived and was being used to great advantage.

Leaving the lowlands we struck into the hills. The game we

On the old Cumberland Pike near Cambridge, O.



chains of mountains, two deserts and touches some of the most interesting territory in the United States.—The trip occupied 60 days

found in abundance. Many wild turkeys flew over our heads. The country abounds in deer and there are many bears. We frightened the grouse and quail, but we could not stop to hunt. We were out for a purpose and were anxious to reach a settlement at least before dark.

Dropping down the back of the Black Mesa hills came our first accident. We carried on the rear of our car a 30-gallon tank of gasoline. It was necessary to use the brakes constantly because the hills are particularly steep. Before we knew it the oil around the brakes had caught fire from the heat caused by the friction and flames shot up dangerously near that big gasoline tank. Instantly the crew of the car jumped into action to fight the flames.

For several minutes the battle was a losing one. The fire mounted into the tonneau and swept around the tank. The danger of explosion from the gas inside kept us all on edge. While one shoveled dirt the others poured the contents of the water bottles over the flames and finally the fire was stamped out, but the tank was still hot.

After Fire Came Water Trouble

The Black River was only a short distance and we let the machine out and rushed it into the water until it flowed over the hood. This cooled us all off, but we found that it was impossible to crank the motor. Then we trudged away to a distant ranch and told our troubles to the man in charge. He was willing to help and brought a team of mules, but the two mules could not budge the heavy car.

"I'll get my mules," said the rancher, as he started back after the long-eared fellows. It was well that he did as the four animals had a hard time to drag us from the sands of the river out to the opposite bank where we could find traction for the run to the White River. We were in the hills, many miles from a house, but our lights helped us to find our way. We drove over a country many would call dangerous, but our first mishap had taught us a lesson and we took no chances.

Typical ranch life on New Mexico plateau

Far into the night we continued to drive. We had become soaked to the skin while trying to work our car out of the river and the night was cold. It was no use to camp, so we decided to continue to drive. We chugged on and at 4 o'clock in the morning reached the White River Indian agency, where we found a storekeeper who gave us beds in his little shanty.

Gasoline is often high-priced on a trip across the continent. We reached the top-notch figure here when we paid 75 cents a gallon for the fluid. It was worth it, however, as the gasoline is carried more than 100 miles from the nearest railroad. We had been paying 40 cents and that did not seem exorbitant. The 75-cent notch looked high. At one place where the storekeeper collected 40 cents a gallon for gas he slipped 10 cents back over the counter after the bill was paid, saying he was anxious to help build a national highway. That was his contribution. It was accepted with thanks.

Our next stop was at Cooley's ranch, 10,500 feet above sea level, the highest point reached on the ocean-to-ocean tour. Here we found "Old Man" Cooley, as the boys affectionately call him, in charge of a big ranch, a part of which is snowbound for 3 months of the year. He was more than willing to meet us and gave us valuable information about the selection of a route through the government lands which will be open all the year around and which can speedily be made tourable. The land around Cooley's, however, proved hard touring, and we were forced several times to fight our way out of muddy dips in the shade of the immense pine trees.

We were piloted from Cooley's ranch to Springerville by Herman Becker, a storekeeper of Springerville, who is also one of the good-roads workers. He directed us down the side of the high hills into the little border town where a meeting was held by National Organizer Potter, who told the plan for a national highway.

Altitude 8,000 Feet on Divide

The following day we were directed across the continental divide. Here at a point about 8,000 feet up we found the waters in the western rivers flowing toward the Pacific and those of the eastern streams toward the Atlantic, separated by less than 1 mile of rolling hills. This country is not level, but the roads are excellent with the exception of high centers made by the old emigrant trailers who crossed the famous Butterfield trail after having left the Santa Fé trail. These high centers can soon be reduced and will form excellent fillers for the ruts over which the highway is to be built. This section has few habitations, and most of the money for building this part of the highway must be supplied by the government.

Our next stop was at Magdalena. When 40 miles from the little New Mexico city our pilots urged us to press on in order to reach town before dark. We did so, but after having driven at a fast clip for 20 miles we struck deep sand and this delayed us. We reached Magdalena at 11 o'clock at night, but not too late for the highway boosters, who waited for us and held a midnight meeting.

While this country looks dry, in reality it was very wet and natives had to help give the car traction

From Magdalena to Socorro, a distance of 25 miles, the roads are excellent. Entering a pass that has been chopped through the rocky hills, the road leaves the high elevation and drops to a few hundred feet above sea level, or almost to the banks of the Rio Grande. This old Spanish town is replete with incident and is quaint and interesting. It is slow, but the people there are progressive and jumped into the national highway movement with a rare vim and energy.

At the meeting 1,000 members joined the Ocean-to-Ocean Highway Association, and the work in New Mexico was given a solid boost by a proposition which looks particularly good to the leading men of the town, who propose to build a bridge over the Rio Grande and cut off 10 miles of roundabout road. Now it is necessary to take the same bridge as the railroad company. The bridge is all right, but a better one is to be built right out of Socorro, and it will be directly on the line of the proposed national highway.

We found the Rio Grande running bank full and in places it had overflowed. We refused to allow any of the motorists of Socorro to pilot us to Albuquerque, as we learned that the road was flooded and dangerous. We took a chance and started early in the morning, and soon found our way blocked by a stream nearly a mile wide. The view was beautiful, but it did not look inviting to the driver of the ocean-to-ocean car.

The water was not more than 3 feet deep in the worst places, but we found the road boggy and it was necessary to enlist the services of a mule driver, who with two mules helped us to fight the mud for several miles. We toured through an orchard, crossed an alfalfa field and then struck the railroad bridge. Our troubles were over after we had crossed the Rio Grande, at least for a time, and we toured out into the wilds of the mesa between Socorro and Albuquerque, where we struck plenty of sand, but no spots that were not tourable. Of course it was necessary to use the low gear for a number of miles, but this section will lend itself to good-road building.

Missing Lunch a Mere Detail

Mayor D. K. B. Selers met us at Albuquerque after we had lost the road and wandered in the mesa for miles. We found it necessary to retrace our path for at least 20 miles in order to route the roads exactly. While we were off the highway the pilots, who had started from Albuquerque with a fine lunch, missed us and we missed the lunch. The reception in Albuquerque was unique, the people there insisting on us remaining over 1 day for a morning meeting in the Commercial Club and prominent business men of the city pledging themselves in favor of the transcontinental highway.

From Albuquerque to Santa Fé we traveled over a road built for the most part by convicts. This phase of the road situation in New Mexico is of especial interest to those in favor of a national highway. The credit system is in force, and the men in stripes work on the highways and earn merit marks which are counted in their favor and which help to make life much more enjoyable. They are doing remarkable work and have solved some of the hard road problems by building bridges and chopping down dangerous grades. This is especially marked on the grade leading into Santa Fé, which is a model. On an easy climb a mountain is topped and the level stretch leading into the quaint old city is reached.

Here at Santa Fé we struck the beginning of the old Santa Fé trail. In this town, which the old emigrant trailers made their headquarters in the days of '49, we found the old cathedral, the old trail marker, showing where the wagons were started on the last stage of the journey to the Golden West and where the stage coaches in later years were started on the long journey toward the Pacific.

At Santa Fé we were given a chance to preach the gospel of good roads from the rostrum of the State House of Representatives. Men from many of the cities and towns of New Mexico were in attendance and the meeting was a remarkable success. Governor McDonald placed the stamp of his approval on the meeting by giving the ocean-to-ocean organizers a great send-off the following morning.

Water Scarce in Raton Desert

Over a stretch of country made famous by the old-time forty-niners we ran the day after our reception in Santa Fé. Years ago the emigrant trains, with the ox teams, labored across the country, always keeping close to water. On the plains of New Mexico between Santa Fé and Raton, however, it was necessary to dig wells, and here we found what the old pioneers had done to develop a land which has not improved much since

Emigrant train on Santa Fé Trail headed west

Near Socorro, N. M., on the Rio Grande there are some places where a National Highway is badly needed

the first team was driven over the Rockies. The run to Las Vegas is over a scenic route through red hills.

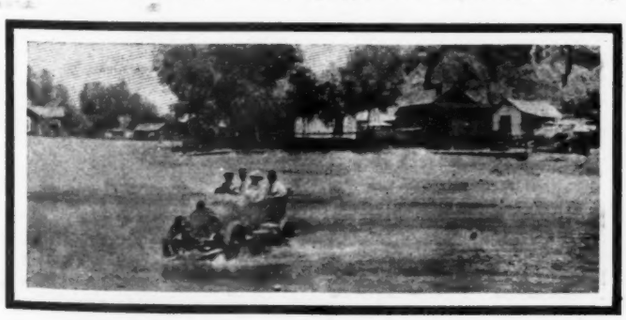
At Cimarron we struck the old Santa Fé trail with the real ruts made by the men who drove across the continent so many years ago. The automobile was driven in these old ruts and the wells located by the pioneers were found, but of course were not needed.

Traveling over the level prairies proved easy for our car, and it was not necessary to fill the radiator. From settlement to settlement we toured and found few ranchers who were brave enough to try to eke out an existence on the arid plains. At Cimarron we struck the ancient landmarks, the mill where the corn was ground into flour and the old station where the horses were kept for use on the stage lines which were so necessary when the West was being opened up in earnest.

Traces of Old Frontier Days

Between Cimarron and Raton is a windmill which is isolated, but which was one of the important stopping points for the teams after crossing the Raton Pass. Campers were here constantly in the days when the teams were being driven across the country. The Indians had little chance to attack the larger caravans at this place, which is called The Windmill because the watering place is out in the open and can be easily watched and guarded. We found that the spots where the Indians ambushed the whites were usually in the wooded country, in the hills or in the deep canyons, where the red man had a chance to hide behind a rock or a bush. There are several such places along the Santa Fé trail, and these are marked by humble graves, many of them with only a wooden cross or a pile of rocks to mark where the victims fell, usually fighting to the last as it was useless to ask for quarter.

The great advantages of the motor car proved a topic of never-ending interest to the ranchers, who were pleased to see an up-to-date touring car fully equipped for desert travel. They enjoyed making the contrast between our car and the best teams they possessed, and figured just how long it would take for their teams to make the run from Raton to Las Vegas, a trick we turned in a day, but which would take their best teams a week to cover.



Fording the San Carlos River in Arizona

Great Reception at Raton

At Raton, the Gateway of the Rockies, we were tendered a reception. Rev. Harvey M. Shields, pastor of the Episcopal church, was in charge of the demonstration, and the people there pledged $2,058, making the total for New Mexico more than $10,000 raised for the good-roads cause. The sentiment of the farmers and ranchers was such that it was determined to put the roads into tourable shape at once, and a bond issue of $5,000,000 was authorized by the state legislature, and this money will be applied to the highway through Mexico and work will be commenced on this road within 12 months.

After a night and a day at Raton we were piloted over the Raton Pass. Here the original road has been repaired, but it follows the path chosen by the pioneers. It only rises to an elevation of 9,000 feet above sea level and never mounts to more than a 9-per-cent. grade. The Raton Pass is one of the best pieces of work on the entire trip. We were warned, or at least told, that our hardest task would be in the mountains of New Mexico. This proved a joke, as the Raton Pass is one of the finest pieces of grade work that we saw on the entire trip, and it is open all the year around. This was only one of the many peculiar things told to transcontinental motorists who are about to make the journey over the southern route. The old Santa Fé trail is open from Los Angeles clear through to Kansas City, and you can start touring to-morrow if you desire to make the trip from sea to sea.

The roads of Colorado cutting the southeast corner of the state are in fine shape for touring. The highway down from the Raton Pass to Trinidad is in as good condition as the transcontinentalist can wish for, and more work is being done. At Trinidad the ocean-to-ocean highway organizers were greeted warmly, and there $5,000 was pledged toward the highway movement by men who seemed to appreciate the good the boulevard will do the entire country.

From Trinidad we toured to La Junta, where another 1,000 enthusiasts joined the movement, and then we sped on to Las Animas. From Las Animas the car was driven over the Colorado-Kansas line into Western Kansas, where the work was taken up on the plains over which the buffalo once roamed. We found thousands and thousands of acres still as wild as when the game was there in quantities, but we also found cities where the national highway sentiment is strongly in favor of the ocean-to-ocean plan. We spent part of a night in a buffalo

Traction was difficult in such spots on the way

wallow into which we had foolishly driven in the belief that we could send the car through on its own power. These wallows were formed by the animals in the hot weather pawing and stamping in the water holes which now are in such shape that a car driven into them must be hauled out by horses. We built our own road out, however, and were just in time to escape a heavy rainstorm which poured down the remainder of the night after we had found shelter.

Our next stopping place was Dodge City, and here we found thousands ready to help put the highway across the country. Here our time changed, and we began to get into Eastern time. We were 2 hours earlier than Los Angeles. We found that Dodge City people appreciate the fact that their city is directly on the route of the proposed national highway, and they turned out to greet us and to help boost. The roads around Dodge City are only in fair condition.

From Dodge City to McPherson the going was good, and we made fast time. At McPherson the entire city turned out to greet us, and in the main streets of the little city a meeting, that will long be remembered by every farmer and every merchant there, was held. In the main street of the town the people pledged $6,000 to the movement and the tour was given a big boost.

At the next stop, Olathe, Kan., another large pledge was made, and by the time the car reached Overland Park, only a few miles out of Kansas City, $43,300 had been promised for the national highway movement. From Overland Park into Kansas City macadam highways were followed all the way, and the tour was ended as far as Kansas was concerned when we struck the Missouri line. We were scarcely across the line before a tornado broke in all its fury, but we had time to reach the hotel.

After the convention the work of organizing the Missouri division of the National Old Trails Ocean-to-Ocean Highway Association was begun, and at Independence many old soldiers helped to start the work in real earnest. A goodly company joined and the car was sent on to Columbia, where, at a meeting, another cohort of good-roads boosters was marched into line.

The roads of Missouri were not anything like we were told they would be. From all reports the tour through Missouri would be a fierce one, and we were prepared to battle with mud from the start to the finish of the cross-state run. Instead, we passed over fairly good roads, we had no trouble and we found the men of the state more than willing to listen, and the women, much like the women of Kansas, more than anxious to help the big project.

We left St. Charles late at night for the run into St. Louis, a distance of 23 miles, over good roads. Our tires by this time began to show the wear of the 2,000 miles of going, and we prepared to change the casings, though we were told that we should strike no more bad roads.

We crossed the Missouri River at St. Charles and then at St. Louis we crossed the Mississippi, and were more than halfway on our journey to the Atlantic seaboard. We entered southern Illinois with a great dread of the corduroy roads. We had no idea what we would strike, and we prepared for as fast a run as possible. All our plans were changed, however, at Highland, a town that pledged more money than any other city along the route of its size.

At a meeting held in the public park $15,000 was raised, and the men of the city started a movement which will certainly make history, as good roads are needed in Illinois, where the highways have practically no bottom. We were told that if we

Through one of the passes in California

On the National Road in eastern Ohio

Summit of the Raton Pass entering Colorado

had tried to drive our car across the southern end of the state after a severe rainstorm we would have needed a team of horses every few miles. As it was, our heavy car made the journey comfortably and without mishap.

The work in Illinois was most important. The farmers there seemed to realize just what the national highway is to mean for them, and where there are now practically no roads a macadam highway is to be built. The corduroy roads are to be replaced with rock-ribbed highways. The old turnpikes, which have outlived their usefulness, will be replaced by a firm boulevard over which an automobile can be driven without trouble.

Our first stop in Indiana was at Terre Haute. There we were escorted through the public park, and in spite of the heavy rainstorm we were enabled to see the beauty spots of the beautiful city. At a meeting held there another $15,000 was promised for the ocean-to-ocean highway, and we were pleased to find many of the hard-headed business men of the city in line for the proposition.

Once in the eastern country the task of routing a national highway began to grow in magnitude. The desert wastes were left far behind. Large cities were now being toured and the route must be carefully selected. The Boons-Lick road had been followed its entire length. Now it remained to send the car over the old Cumberland pike. Through Indiana the work was pushed to Richmond, on the Indiana-Ohio line, and here the organizing car was met by Jesse Taylor, one of the good-roads workers of Ohio, and Arch Houston and James R. Marker, the latter Ohio State Engineer. This trio of good-roads boosters undertook to pilot us all the way across the Buckeye state.

At Springfield the work was given a boost. Then at Columbus a stay of 2 days put Col. Potter in touch with some of the big men of the state and a promise of 50,000 members for Ohio

Picking out a road in the heart of the Rockies

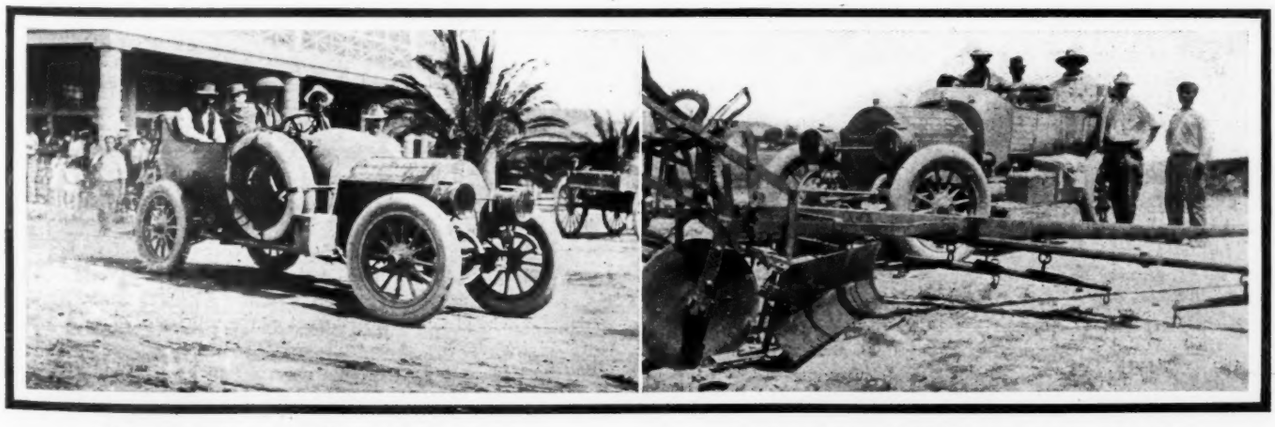
Much of New Mexico looks like this picture

was made. This means that in the state that can boast of more miles of good roads than any other section we crossed, the movement is to be pushed forward to the right kind of a finish, which will mean a macadam highway from the western to the eastern boundaries of Ohio.

At Wheeling, W. Va., our pilots, Taylor, Marker and Houston, were forced to leave us, but we had chosen the route of the old Cumberland Pike clear through to Cumberland, and the way was plain. Just outside of Wheeling we were given a real fright when on the grade built along the precipice, over which Col. McColloch leaped when pursued by Indians, our brakes gave out and our car started rapidly backward. Whirling the wheel in the right direction, driver John Zak turned the car off the bridge and directly against the face of the cliff. It was lucky that he did not lose his head, as we all might have been dashed to death had we rolled over the bank to the river 200 feet below. This was the most serious mishap of the long tour, but it turned out decidedly in our favor, and we continued on over the Alleghany mountains toward Cumberland.

The roads of Maryland over which we traveled are poor indeed. We found them in such bad shape that it was necessary to drive slowly to avoid cutting our remaining casings to pieces. The tires had done well. In one front tire we carried Los Angeles air, and we were anxious to keep it intact until we reached New York.

The people of Cumberland turned out royally for us. In the Cumberland mountains we found wild ripe red raspberries and blueberries. The scenery was delightful and easily rivals anything we saw on the entire tour. If the scenery of the Alps in Switzerland is more beautiful than the Alleghany mountains it is worth traveling halfway around the world to see. C. A. Tenney, State Engineer for Maryland, who made the trip with



Leaving Brawley, Cal., for the Arizona desert

Road machine which is at work on the big road

us through Maryland, says the scenery of Maryland is grander than that of the Old World, and is more beautiful than anything he could find in Europe.

From Cumberland we drove on to Washington, D. C., where President Taft greeted us. We found the Chief Executive more than willing to listen to our story of a national highway, and he was interested in the project which will mean so much to the people of the United States. We went to the Capitol building, and there found senators and congressmen anxious to take a hand in the proposition, and we secured the pledges of 178 congressmen and twenty-eight senators in favor of a national highway from the Pacific to the Atlantic, built over the old Santa Fé trail, the Boons-Lick road and the Cumberland Pike. Our work in Washington was more than valuable, as for the first time in the history of the movement the proposition was carried right into the camp of the men we need so much to help when this matter is brought up before congress at the next session.

From Washington to Baltimore, a distance of 40 miles, we made the run over good roads, and C. Francis Jenkins, in a car which he has driven across the continent, piloted us all the way and sent us out on the last leg of our journey with the conviction that there are some of the best highway workers in the world who live in this country.

We spent the night at Wilmington, Del., another town directly on the line of the national highway. Here we once more found many who favor building a highway entirely across the United States. The roads in Delaware are in fine shape, but they could be better, and the people of the state seem to realize this fact.

Leaving Wilmington the last morning of the long tour we drove to Philadelphia for lunch and then prepared carefully for the last run into New York. We found the men of the Quaker City ready to help us. We were given a rousing send-off, and a pilot was furnished us for the remainder of the tour into Gotham.

Pouring Pacific Into Atlantic

We reached New York at 5 o'clock in the afternoon and were piloted directly to Coney Island, where we dipped the wheels of our machine in the waters of the Atlantic ocean. There the ceremony of emptying the bottle of Pacific ocean water into the Atlantic was carried out with due ceremony, and this function seemed to catch the fancy of the immense throng which had gathered on the beach.

For the first time in the history of the ocean-to-ocean highway movement water from the Pacific was carried across the continent and poured into the Atlantic, and we were ahead of the Panama canal in mixing the waters of the two great oceans.

The police in New York were more than kind. We had been arrested in Baltimore for not carrying a number. The justice there had refused to fine us after hearing the story of the tour told in the courtroom. The police of New York also were more than kind, and allowed us to tour through the city without a muffler, and helped us in every way to make the finish of the long tour a great success.

The national highway has been routed. The distance from ocean to ocean is 3,359.7 miles. The route is by way of the Santa Fé trail, the Boons-Lick road and the Cumberland Pike.

This road must be built along the lines of the least resistance. It must follow a route that is open all the year. The Santa Fé trail is ideal for such a road. The national boulevard can be made to follow a most scenic course through the lowest point of the Rocky Mountains and across fifteen states.

The eternal question is, "When will this road be built?" The answer is at least 5 years from now, if not sooner. However, it must be put in tourable shape at once. Already the people of California are at work making the Mammoth Wash, one of the worst stretches of the entire journey, tourable. This will be ready before the end of the present year. In every other state the workers there are planning to do emergency road work to get the highways into shape for the immediate use of motor cars.

The work of signing the entire highway is to be done just as soon as possible. Red, white and blue signs, it is believed, will be adopted, and these will be placed from Los Angeles along the line of the proposed national highway right through to New York. In the desert steel signs will be used, and on the state highways the telegraph poles will be painted with red, white and blue signs. In this way it will be possible to follow the Santa Fé trail, the Boons-Lick road and the Cumberland Pike. It is no longer an automobile stunt to drive across the United States.

Transcontinental Stone Road Project

Detroit and Indianapolis Car and Accessory Manufacturers Start Movement To Build Such a Highway

Plan Is to Raise $10,000,000 From the Automobile Industry Before January 1

NEW YORK, Sept. 9—One of the biggest plans for building a stone road from New York to San Francisco was made known in Indianapolis and Detroit today when it was announced that a movement has been started with the motor car and accessory makers in those cities to raise over $10,000,000 from the motor industry throughout the country to purchase crushed rock for such a roadway. The purchasing and delivering of the rock being a part played by the motor industry. The building of the road will be left to the country and state authorities with whom contracts will be made to complete the work within a certain time and according to certain instructions before the materials are turned over to them.

The plan to raise the $10,000,000 from the motor industry is one of the most practical and rational yet suggested in the good roads field. This sum has to be raised by January 1, 1913, a little over 3 months. The plan is to collect from every motor car maker, from every accessory maker, from every car dealer and from owners. With the manufacturers and dealers the plan is to collect a third of 1 per cent. each year for each year, this amount to be taken from the gross receipts of the company, which will provide a fund much in advance of $10,000,000. Cash or notes will not be collected but donation slips issued, which slips will be turned over to a bond company to hold until the permanent organization which will care for the purchasing and delivering of the material is organized.

The plan originated over 1 year ago in the fertile mind of Carl G. Fisher, of Indianapolis Speedway fame and who during the last 12 months has been accumulating data on the cost of road construction, cost of road materials, cost of cement bridges, cost of cement mile posts, etc. During that time he has talked with many manufacturers to find out if they would co-operate in such a scheme. This work started with the Indianapolis car and accessory manufacturers, all of whom agreed with the scheme and at a meeting held today the movement was launched on its practical cost by everyone of the makers agreeing on the plan outlined. A campaign will be made on the Detroit makers the end of this week and it is expected that little difficulty will be encountered and that the industry will practically be a unit on furthering this plan. After Detroit will come Cleveland, Buffalo, Toledo and many other motor centers.

In order that every subscriber to the fund will be protected no construction of any nature will be started until the entire

subscription has been guaranteed, and if for any reason the plan should fail all monies will be returned to those having made payment with interest of 3 per cent. By having the required amount guaranteed by 1913 it will be possible to complete the work by 1915 so that the road may be used by motorists attending the Panama Pacific Exhibition which opens in San Francisco in the spring of 1915.

Instead of getting all of the financial assistance from the manufacturers and dealers the plan includes the incorporation of all car owners in the country. This is possible by two classes of membership, one a $5 class and the other $100 class. There is also talk of a third of a $1,000 class. Radiator emblems of different types will be issued to each member according to his class and special wall or window medals issued to all dealers who contribute a total of 1 per cent. of their gross receipts to the fund.

The plans do not call for any peculiar highway route across the states. At present there are two or more transcontinental highways and the matter of deciding whether either of these or a different is to be selected will be left to a commission of the motoring interest. All monies collected or subscribed for the road will be used in the actual purchase of material, which is to be purchased at a price covering delivery at the railroad siding when needed. Prices for material range from 90 cents to $2 per cubic yard, depending on the distance the material has to be hauled. A conception of the amount of rock required for such a highway can be gained from the fact that a roadway 9 feet wide and with rock 12 inches deep costs $1,750 a mile for material. This preposes a short haul. Although by route it is 3,300 miles from ocean to ocean little more than 2,200 miles of transcontinental highway would call for stone construction as there are approximately 900 miles of improved streets in cities, towns and villages on this course. This fact alone, considerably reduces the problem of building such a highway. The fund of $10,000,000 will give approximately $5,000 a mile for road material, and since road material represents from only 30 to 50 per cent. of the cost of building a road it means that instead of a $10,000,000 one across the country there will, in reality, be a $25,000,000 one.

The actual building of the road will be under the state and county authorities to whom the materials will be turned over. The states and counties will sign contracts to build the roads under government inspection. Mr. Fisher has discovered that some of the best rock roads in northern Indiana and northern Ohio have cost but $1,750 a mile for material. It is natural that in building a stone road in Iowa the material will cost more because of the long haulage. This will amount to not more than $800 a mile for any part of the country.

Many additional plans are being furthered in connection with this transcontinental scheme, one of which is the erection of sign posts, one for each donation of $1,000 secured on the plans outlined. Each post would carry a bronze plate containing the name of the donor. Such posts will cost $12 each.

Still another plan is that of entering into arrangements with the telephone companies whose lines are on the selected highway to secure plugging facilities on the line so that the motorist having a break down between cities can immediately get into telephone communication with his dealer, a repairman or garageman. Such a system as this is at present in operation in England and also in certain sections of southern California.

Possibilities Are Great

The possibilities of travel on a transcontinental highway of this nature are unlimited. Supposing 250,000 cars made a return trip over such a highway occupying 40 days. If each car carried four people the daily cost would be $20 or $800 for the round trip. At this same rate there would be an expenditure of $20,000,000 for the 25,000 cars. While this is a broad calculation so far as the number of cars is concerned it will, however, serve to show the value to the towns and cities passed through of such a highway.

Huber Patent May Trouble 20 Firms

Covers Three-Point Suspension—Owners Will Test Its Validity to the Limit —Trial Suit Brought

Date for Return of Temporary Injunction in Ford vs. I. A. L. Case Extended to October 1

DETROIT, Sept. 9—The Emil Huber patent No. 788,407, dated April 25, 1905, covering three-point suspension of the main frame of an automobile bids fair to make trouble for some twenty automobile concerns according to R. A. Parker, of the firm of Parker & Burton, of this city, patent attorneys for the North American Veicle Company, owner of the Huber patent.

Within the last 2 weeks the patent has assumed large proportions, and it is the intention of the owners to test its validity to the limit. Already several concerns have taken out licenses among which are the Packard Motor Car Company, the Havers Motor Car Company, and the Cass Motor Car Company.

The North American Vehicle Company, through Mr. Parker, has sued the Detroit Taxicab & Transfer Company, which concern owns a number of Kelly machines. The Kelly Motor Truck Company, of Springfield, O., is conducting the case for the Taxicab concern through its attorneys, Staley & Bowman, of Springfield, O. It is merely a test case and suit has been brought against the Detroit Taxicab & Transfer Company simply because this concern is the most convenient to get at. The North American Vehicle Company claims that the Detroit Taxicab Company is operating trucks designed along the lines of the Huber patent and in violation of this patent.

The case is now on the docket of the United States district court but it is doubtful if it will come up for consideration during the present term. Should it be lost in this lower court, Mr. Parker states that his client will carry the issue to the Court of Appeals and in that event Judge Dennison, who is an old patent practitioner, will no doubt handle the case.

Staley & Bowman, attorneys for the Taxicab company, on September 3 filed an answer to the North American Vehicle Company refuting the latter's claim.

More Time Given in Ford and I. A. L.

BUFFALO, N. Y., Sept. 9—The date for the return of the temporary injunction issued several weeks ago by Judge John R. Hazel, in United States district court here, directing the International Automobile League, of Buffalo, to show cause in the action brought against it by the Ford Motor Car Company, of Detroit, has been extended to October 1 through agreement of the respective attorneys in the case. The order was to have been returned on last Thursday. The Ford company wants a permanent injunction against the International Automobile League to restrain that concern from selling or advertising for sale Ford automobiles at less than the price fixed by the manufacturers of the Ford cars.

The Ford company in its complaint alleges that the International Automobile League advertised that any person paying $10 would be admitted to membership and would have the privilege of purchasing Ford cars at less than market price. The Ford company declares many orders for Ford cars were taken and that an attempt was made to buy the cars from the makers but the sale was refused. It is claimed that the Buffalo league secretly bought the cars from some Ford dealers and sold them to members of their organization at a 10 per cent. discount.

Trade News of the Week

Westcott and Kline Elected to Membership in the N.A.A.M.—Sales Managers Dates Set

Feps Carbureter Activity—General Motors Promotes Day—Morrow Doubles Capital

THE Westcott Motor Car Company, represented by H. L. Ashly and the Kline Motor Car Corporation, J. A. Kline, have been elected to membership in the National Association of Automobile Manufacturers. The membership of the Metzger Motor Car Company was transferred to the Flanders Motor Company and that of the Rapid Motor Vehicle Company to the General Motors Truck Company.

The two first-named alterations in the membership roll are net additions to the association, but the other two are formal transfers to correspond with business changes that already have taken place. G. G. Luthy succeeds J. B. Bartholomew, for the Bartholomew Company; F. R. Benson succeeds Frank R. Fisher, of the E-M-F Company, and Hanson Robinson succeeds W. R. Innis, for the Studebaker.

The subject of a general meeting to be held in Detroit in October or November was discussed and a committee to arrange the meeting was named.

The association has renewed its agreement for financial cooperation with the American Automobile Association on similar lines to that of 1911. The agreement extends to the end of 1914.

Application for membership in the Chamber of Commerce of the United States will be made by the association.

Four More in Board of Trade

At the last meeting of the Automobile Board of Trade the membership of the United States Motor Company was divided into four heads and individual membership was granted to the Maxwell-Briscoe Motor Company, the Dayton Motor Car Company, the Alden Sampson Manufacturing Company and the Columbia Motor Car Company. Another member was also elected, but no announcement as to its name was made.

Preparations for shaping up the association for its contemplated merger with the National Association of Automobile Manufacturers is progressing and the Dyer license matter, as to the form of the licenses to be granted on application of the organization, is being worked over by the attorneys of both.

Dates Set for Sales Managers

The long heralded convention of sales managers, which was originally scheduled for last July, will be held September 30 and October 1 at the headquarters of the Automobile Board of Trade. The bare announcement of the dates has been made by Chairman Harold O. Smith and the program will be known at a later date.

It was found that the trade was too busy for the convention in July and that the purpose of the meeting would be better served by holding it between seasons.

The regular quarterly and subsidiary committee and board meetings of the Board of Trade and the N. A. A. M. are scheduled for October 2 and 3.

Schoen Takes Up Feps Carbureter

The Schoen-Jackson company, of Media, Pa., has finished the building of a complete plant in addition to the other factories of the company and will manufacture a new type of carbureter to be used on automobiles and boats. The carbureter will be known under the trade name of Feps.

According to the announcement of the company, the device is the invention of J. L. Fritz and among its special features claimed for it by the company is the fact that it has no springs, balls, cams or reeds.

Mr. Schoen learned of the device from its inventor and after some negotiations secured the exclusive right to manufacture for the Schoen-Jackson company, which hitherto has been prominent as a producer of tubing.

Mr. Schoen himself has taken out several patents on carbureters and is a pioneer in the field of automobile research. The Feps device has been given hundreds of severe road tests.

General Motors Advances Day

DETROIT, MICH., Sept. 9—President Thomas Neal, of General Motors Company, has announced the election of William L. Day, late general sales manager of the Mitchell-Lewis Motor Company, of Racine, Wis., as vice-president and general manager of General Motors Truck Company.

Gleeson Murphy, who has temporarily held the office of vice-president and general manager of General Motors Truck Company in connection with his other work at the executive offices of General Motors Company, at Detroit, will in future devote himself exclusively to his regular duties of assistant to the president of General Motors Company.

Morrow Company Doubles Capital

ELMIRA, N. Y., Sept. 9—At the annual meeting here last Thursday of the Morrow Manufacturing Company, manufacturers of transmissions, small parts and automatic screw ma-

Automobile Securities Quotations

Save for the highly speculative issues and those listed upon the New York Stock Exchange, trade in automobile securities during the past week has been dull. Goodrich was the strongest feature of the list, advancing to 80 bid on what appeared to be investment buying. General Motors and Studebaker were also firm. United States Motor Company stock of both issues was very weak on the curb. The 90-day extension granted to the company by the banking and merchandise creditors, expires by limitation on Friday and the weakness of the stock is construed favorably by the street as foreshadowing reorganization.

	Bid	Asked	Bid	Asked
	1911		1912	
Ajax-Grieb Rubber Co., common	..	..	150	165
Ajax-Grieb Rubber Co., pfd	..	..	95	100
Aluminum Castings preferred	..	..	99	102
American Locomotive, common	38	39	43½	44½
American Locomotive, preferred	106	107	109	110
Chalmers Motor Company	..	..	145	150
Consolidated R. T. Co., common	5	10	13	16
Consolidated R. T. Co., preferred	10	20	50	60
Firestone Tire & Rubber Co., common	179	181	279	283
Firestone Tire & Rubber Co., pfd	105	107	106	108
Garford Company, preferred	..	..	99	101
General Motors Company, common	42	43	39	40
General Motors Company, preferred	80	82	80	82
B. F. Goodrich Company, common	*243	*245	†80	†81
B. F. Goodrich Company, pfd	*118¾	*119¾	†108	†109
Goodyear Tire & Rubber Co., common	230	240	332	336
Goodyear Tire & Rubber Co., pfd	105	107	105½	106½
Hayes Manufacturing Company	..	..	..	93
International Motor Co., common	..	..	27	28½
International Motor Co., pfd	..	..	84	85
Lozier Motor Company	..	..	50	60
Miller Rubber Company	..	..	..	145
Packard Motor Co., preferred	..	..	105½	107
Peerless Motor Company	..	..	115	120
Pope Manufacturing Company, common	42	46	39	40
Pope Manufacturing Company, pfd	72	77	73	74
Reo Motor Truck Company	8½	10	9	10½
Reo Motor Car Company	23½	25	22	24
Studebaker Company, common	..	..	44	45
Studebaker Company, preferred	..	..	94½	95¼
Swinehart Tire Company	..	..	98	100
Rubber Goods Company, common	85	95	100	105
Rubber Goods Company, preferred	100	105	107	110
U. S. Motor Company, common	30	32	2	2½
U. S. Motor Company, preferred	70	71	7	7½
White Company, preferred	..	..	107	109

*Old. †New.

chinery for Overland automobiles, it was voted to increase the capital stock of that organization from $500,000 to $1,000,000. The papers making formal application for the increase have been completed by Attorney Royal Scott, of the Willys-Overland Company, and rushed to Secretary of State Lazansky at Albany,

Of course, action by the state officials in matters of this kind is merely formality. The increase was made necessary to cover investments already made in the local Morrow factory. The $500,000 increase already is actually covered by money put into the business in the way of equipment, buildings and stock. At the meeting election of officers also was held. A. P. Morrow, Elmira, was re-elected president. Other officers re-elected were: Vice-president, John N. Willys; treasurer, Walter B. Stewart; secretary, Edwin A. Morrow.

Big Registration Gain in State

ALBANY, N. Y., Sept. 9—Secretary of State Lazansky reports that the receipts of his office for the registration of automobiles and licensing of chauffeurs up to and including August 31, 1912, for the 7 months of the fiscal year beginning February 1, are $1,000,844.25. The sources of this revenue follow:

Pleasure vehicles, 90,186	$796,670.00
Commercial vehicles, 8,636	42,370.00
Chauffeurs' licenses, 41,406	116,685.00
Dealers' licenses, 1,665	24,975.00
Dealers' extra numbers	10,831.00
Miscellaneous receipts	9,313.25
Total	$1,000,844.25

The total number of licenses issued for the 7 months has been 100,700, compared to 85,301 for the 12 months ending January 31, 1912. The number of chauffeurs' licenses up to August 31 is 41,406, compared to 35,900 for the entire fiscal year previous.

Market Changes of the Week

The most important feature of the week's market was the advance in the price of Bessemer and open-hearth steel. The advance on each was $1.50 a ton, on Monday, as a result of the great activity in the industry. Lead advanced $.22 1-2 per 100 pounds, rising gradually throughout the week, closing on Tuesday at $5.10.

Material	Wed.	Thurs.	Fri.	Sat.	Mon.	Tues.	Change
Antimony, per lb.	.07½	.07½	.07½	.07½	.07½	.07½	.....
Beams & Channels, 100 lbs	1.51	1.51	1.51	1.51	1.51	1.51	.....
Bessemer Steel, Pittsburgh, ton	22.50	22.50	23.50	23.50	24.00	24.00	+1.50
Copper, Elec., lb.	.17⅜	.17⅜	.17½	.17½	.17 11/20	.17 11/20	— .00 1/20
Copper, Lake, lb.	.17⅝	.17⅝	.17⅝	.17⅝	.17⅝	.17⅝	.....
Cottonseed Oil, Sept., bbl.	6.36	6.41	6.35	6.40	6.41	6.50	+ .14
Cyanide, Potash, lb.	.19	19	.19	.19	.19	.19	.....
Fish Oil, (Menhaden)	.33	.33	.33	.33	.33	.33	.....
Gasoline, Auto, 200 gals. @	.21	.21	.21	.21	.21	.21	.....
Lard Oil, prime	.85	.85	.85	.85	.85	.85	.....
Lead, 100 lb.	4.87½	4.90	4.90	4.90	5.10	5.10	+ .22½
Linseed Oil	.69	.69	.69	.69	.69	.69	.....
Open-Hearth Steel, ton	23.00	23.00	24.00	24.00	24.50	24.50	+1.50
Petroleum, bbl., Kansas crude	.70	.70	.70	.70	.70	.70	.....
Petroleum, bbl., Pa. crude	1.60	1.60	1.60	1.60	1.60	1.60	.....
Rapeseed Oil, refined	.68	.68	.68	.68	.68	.68	.....
Rubber, Fine Up-River Para	1.20	1.19	1.19	1.19	1.17	1.17	— .03
Silk, raw Ital	....	4.15	....	....	....	....	.....
Silk, raw Japan	....	3.85	....	....	....	....	.....
Sulphuric Acid, 60 Beaumé.	.99	.99	.99	.99	.99	.99	.....
Tin, 100 lbs.	47.10	47.50	47.45	47.45	48.00	48.25	+1.15
Tire Scrap	.09⅛	.09⅛	.09⅛	.09⅛	.09⅛	.09⅛	.....

Hupp Increases Capital

Issues $2,500,000 Common to Balance Earnings Diverted to Company—Big Stock Dividend

E. R. Hollander Heads Fiat Sales Company Which Will Market Factory Product in East

DETROIT, MICH., Sept. 9—The stock of the Hupp Motor Car Company has been increased from $500,000 to $750,000, according to the papers which recently have been filed with the secretary of state. This capital increase is made possible through the transfer of $250,000 from the company's surplus to its capital account.

This disposition of its surplus was voted at a recent meeting of the stockholders of the Hupp company, at which it was also voted to allow a 50 per cent. stock dividend on account of the capital increase.

The Hupp company reports prosperous conditions, and has planned to make about 9,000 machines for the coming season.

Hollander Heads Fiat Sales

ALBANY, N. Y., Sept. 11—At special meeting of the directors of the Fiat Motor Sales Company, the $300,000 corporation just organized at Manhattan, these officers were elected: President, E. R. Hollander, New York; vice-president, Henry M. Sage, Albany; secretary, R. D. Willard, New York; treasurer, Chas. L. A. Whitney, Albany.

The new concern will handle the Fiat in New York, Albany, Boston, Providence and New England.

Rate Boost Delayed for Month

Final action on the part of the railroads to advance the classification of automobiles as outlined in previous issues of this publication, has not been taken and the matter has gone over until the October meeting of the Southern Classification Committee.

Under the proposed change, the car-load rate from New York and New England common points to the Pacific Coast would be raised from $3 to $3.30 per 100 pounds; from Buffalo-Cleveland-Pittsburgh common points, $3.20 in place of $3 and from Detroit common point of $3.10 instead of $3.

The change was contested by the National Association of Automobile Manufacturers.

Rubber Market Awaits Auction

Crude rubber sagged again last week under trading of smaller volume. The trade is awaiting the London auction which will dispose of from 900 to 1,000 tons of plantations, considerably more than has been offered at one of the fortnightly sales this year. Receipts at Para during August amounted to 1,655 tons, according to bulletins from that port. South American rubber shares are reported active and on the verge of a boom. The present price level is on a basis of $1.17 1-2 per pound for up-river fine.

Sedwick to Manage Speedway

INDIANAPOLIS, IND., Sept. 10—Charles W. Sedwick has been appointed manager and Homer McKee, publicity director of the Indianapolis Motor Speedway. Neither will give up his other business. McKee is advertising director of the Cole Motor Car Company. Plans are to start at once preparing for the 500-mile Memorial Day race.

U. S. Motor Co. Fails

Creditors Apply for Receivers When Agreement as to Reorganization Falls Through After Many Efforts

Liabilities Estimated at $12,250,000 with Nominal Assets of $15,300,000

INVOLUNTARY bankruptcy proceedings of a friendly character were entered against the United States Motor Company late tonight, in the United States District Court before Judge Charles M. Hough, of the Southern District of New York. The petitioning creditor is the Brown & Sharp Manufacturing Company. The parties to the suit are the United States Motor Company, Alden-Sampson Manufacturing Company, Brush Runabout Company, Columbia Motor Car Company, Dayton Motor Car Company and the Maxwell-Briscoe Motor Company.

Judge Hough forthwith named W. E. Strong, of the Central Trust Company, and Roberts Walker, formerly head of the Rock Island System, as receivers under bond of $150,000. The bond was originally placed at $75,000, but owing to the fact that ancillary proceedings will be instituted immediately in Indiana, Ohio, Michigan, New Jersey, Connecticut, Rhode Island and Massachusetts the amount of the tentative bond was doubled.

The liabilities of the company are estimated at $12,250,000 and the assets, consisting of cash, bills receivable and securities of subsidiary and other corporations, are valued at $15,300,000. The assets are largely embraced by the factory plants of the subsidiary companies, which are scheduled at $6,250,000, against which there is a secured indebtedness of $200,000. The quick assets, as of July 31, amounted to $9,250,000. Factory inventories, which represent an item of $4,000,000, are included in the foregoing item as also is the amount of $2,500,000 which represents all the cash on hand and bills receivable.

The liabilities of the company consist of $6,000,000 of debenture bonds, while the remainder, amounting to $6,250,000, consists largely of the merchandise and banking claims against the company.

Does Not Mean End of Company

Appeal to the courts, according to practically everybody interested in the matter, does not mean that the end of the company is at hand. On the contrary, they say that under the receivership much aggravating delay and expense can be saved by having the federal court take jurisdiction. It is also pointed out that when the time comes for reorganization some plan to assess the stock or wipe it out can be accomplished with more dispatch than such an end could be accomplished without a receivership.

The date to which the extension goes is Friday and the sudden determination to file the proceedings was taken in order to forestall legal proceedings in the state courts and elsewhere.

The whole trouble with the company is lack of ready money. Several of the subsidiaries are in excellent shape individually, particularly the Maxwell-Briscoe Motor Company, in which plant the book value of the stock is 100 per cent. of its value. But owing to the combination of circumstances the funds that must be devoted to caring for current needs, back debts and for financing the 1913 manufacturing campaign are short of the required amount.

In the bill of complaint it is stated that the receivables owned by the subsidiary companies are in many instances not immediately capable of collection in any way and that the motor company is liable upon the entire indebtedness. It is also said that through the indiscriminate issue to banks and others of promissory notes now outstanding, as aforesaid, intricate and involved questions exist as to the equities and rights of the defendant companies as between one another, which can be adjudicated only through one suit in equity wherein all such questions can be determined.

In another section of the bill the following condition is outlined:

While the motor company and the subsidiary companies have a large amount of supplies and materials on hand and there are in the hands of the selling companies for sale completed automobiles of the value of about $2,000,000 (on July 31), the conditions of the automobile industry are such that said finished product can not be sold in time to provide for the payment of the matured and maturing obligations of the said companies and neither the motor company nor the subsidiary companies have now adequate or sufficient funds, and are unable either by realizing upon their quick assets, even at a great sacrifice, or by securing further loans, or otherwise, to meet their current obligations which have already matured and will mature in the near future, and in view of the present financial condition of said company it will be impossible for any of them in the near future to raise by loans or otherwise sufficient funds to enable them to prosecute their business.

Percy Martin, head of the British Daimler Company and the Birmingham Small Arms Company and a leading exponent of the Knight motor in England, made a detailed inspection of all the plants of the United States Motor Company last summer. He stated after the inspection, which was very thorough, that the companies were in condition to produce automobiles worth from $20,000,000 to $25,000,000 annually as far as machinery and equipment were concerned.

Some of Mr. Martin's Suggestions

Quoting from Mr. Martin's report, under date of August 22, the following extract is interesting: "If a definite policy or program could be given to the various manufacturing installations and if a wise distribution of the work according to its suitability to the equipment of the various plants were dictated, I think that the economies from a manufacturing standpoint would be such that the difference between the manufacturing cost for a given article and that of the best factories in the United States will be very slight, in fact, negligible for the present scheme of reorganization."

Continuing Mr. Martin says:

"The present state of the plants, which are being practically shut down due to lack of work, is a very serious matter and is rapidly destroying the spirit of progress which apparently did prevail and certainly should prevail with all of the factory managers. The sooner a definite policy can be launched, whether such policy be in every detail correct or not, the advantages to the company will be very great."

In another place he says:

"As to the Sampson truck business, as well as the Brush plant in Detroit, I am inclined to believe that those factories could be closed to advantage and the very good supply of machinery and plant at present located there profitably distributed among the other factories."

The chief plans of reorganization that are being discussed include a proposition to assess both classes of stock $22.50 per share. Another is to obtain an agreement among the creditors to accept stock issues in the reorganized company for their claims, dividing the claims into classes and settling them according to their class.

The matter is returnable before Judge Hough on the third Monday in October. Rosenberg & Levis have been named attorneys for the receivers; Joline, Larkin & Rathbone will represent the Central Trust Company and the banking creditors to the amount of $5,000,000. Parks & McKinstry will be associated as counsel. Sidney S. Meyers, who is a member of the creditors' committee, will act for the merchandise creditors.

How to Paint a Roadster

Requires Different Treatment From the Touring Car or Limousine—Paint Suffers More From Vibration

For Color Scheme, Dark, Rich Red Tones Are to Be Preferred—Other Attractive Hues

A READER of THE AUTOMOBILE suggests that information be given for painting a roadster. The roadster type of car, in not a few respects, must be treated somewhat differently than the touring car or cars of even a larger build. Usually it is more difficult to keep paint and varnish solid and intact on these light, jolting, quick-moving cars, than upon the cars holding firmer to the earth by reason of their greater weight. These light cars suffer from vibration, against which it is hard for the most elastic paint to prevail.

Choice of colors is not an easy selection to make for the roadster. Colors which upon the larger field of the bigger cars appear to splendid advantage are often entirely unsuited for display. upon the restricted space of the roadster. The roadster is a type of car that needs attention. By virtue of its small size it is rather a wretched looking car under even the mildest form of neglect. To appear the genteel and jaunty car that it really is it must be kept constantly under a good raiment of varnish, and as often as the color becomes worn and dingy, and perhaps takes on the spots of the leopard, it should be put through the paint shop for expert treatment.

When it makes entry to the shop the first move on the part of the painter should be to mark all the furnishings belonging to the car and put them away in the racks designed for such things. Give the car a sharp look over and determine the amount and extent of painting repairs necessary, granting, of course, that the owner has not stipulated precisely the requirements he is prepared to pay for. Anyhow, get the car upon strong supports to a height that will permit the cleaners to prowl under the car and clean up the mechanism. If anything, these small cars get more badly stuck up with thick grease, road dirt, etc., than the larger machines. A good plan in cleaning is to first saturate the mechanism and cleanable parts with a mixture of one part crude oil and three parts turpentine, and let stand for several hours, at the expiration of which time give the parts a fresh supply of the oil turpentine mixture following with knife scraping and dry wiping with burlap cut into 5-inch strips. Plenty of oil and grease will likely be found on the body of the car, and upon the chassis, which it will be necessary to remove with small pieces of waste or clean rags saturated with turpentine.

Touching Up Defective Places

Having the surface and parts below the body line clean, go go over the body with No. 1 1-2 sandpaper. Any chipped or defective places upon the surface of either the body or chassis should be touched up with an oil pigment mixed, so as to dry in at least 24 hours. When dry, such defects should be draw-puttied to fetch them out level with the surrounding surface. Use a hard drying putty, and after 24 hours rub these splotches of hard pigment down level with the remaining surface, using for the purpose a small rubbing brick dipped in turpentine, or gasoline, if the insurance people will allow it.

Sandpaper the chassis down to a smooth and solid foundation, making sure with respect to both body and chassis that the surface is clean and fine.

If there are no deep surface checks the color may now be put on directly over this old paint foundation. If checks appear which the color and the varnish are not certain to eliminate, it is advisable to apply a coat of lead paint mixed with enough turpentine to flat down without any glass. Beat up some oil-ground lead in turpentine and add enough of some color corresponding in shade to the final color selection to give it the right appearance.

This coat will dry in 24 hours fit to lightly sandpaper with No. ½ paper. In either event the surface is now ready for the color coat, or the ground coat used to support the color coat in case a semi-transparent color or lake coat is to be used.

All colors, or practically all colors, used upon automobiles at the present time are ground in japan and in preparation for use require only to be thinned with turpentine. For every seven parts of turpentine use one part raw linseed oil as a binder for the pigment. For the second coat of color use ten parts turpentine and one part raw linseed oil. This proportion of oil does not materially delay the drying of the color, and it gives it a gripping power and an elastic property which are vital to its durability.

Apply the color with a 2 1-2-inch camel's hair flat brush. If a lake pigment is to be used the second coat of flat color may be omitted and a coat of the flat lake—that is, lake beaten up with turpentine to dry without gloss—applied. Over this use a glazing of lake made by first breaking the lake up with turpentine to a brushing consistency and then adding the rubbing varnish in sufficient quantity to give a mixture consisting of 1 ounce of color to a full pint of rubbing varnish. Apply this varnish color or glaze coat in the same manner that you would flow on the varnish coat. Knock the gloss from this coat in due time by rubbing it with a soft sponge dipped first in water and then in pumice stone flour. Stripe and ornament on this surface and apply a coat of clear rubbing varnish. Give this coat, at the proper time, a solid rubbing with water and pumice stone flour, and finish with a hard-drying varnish specially designed for automobile work. Such in a rather brief outline is the way to get the painting and finishing operations along in proper order.

Possible Color Selections

In color for the roadster, dark, rich reds, like aurora red, automobile red, No. 40 carmine and twentieth century red, deep shade, are to be preferred. Deep-toned maroon is another effective red in connection with which may be mentioned English scarlet lake, Munich lake, English or American crimson lake, and purple lake. This latter, it will be noted, is an exceedingly popular color just now and withal very beautiful. Richelieu blue and ultramarine blue, both magnificent colors, with a wealth of effects in them, are popular roadster pigments. Napier and thistle green are enticing colors for the small car. Automobile and battleship gray, picked out with black and gold lines, show the roadster to the very finest advantage.

One important consideration in this matter of color selection for the roadster, or for any other small type of car, is that, generally speaking, a single color, fitly chosen, is in the main more effective and serves best to display the charm of outline and figure than a combination of two or more colors. Neat, effective striping, executed in quiet colors of strong individuality, and cast with artistic precision upon the surface, serves best to accentuate the graceful lines and the choice color display cast over the car.

The quantity of material required to repaint the roadster as above directed will be found approximately as follows:

Body

Lead, mixed ready for use	1 quart
Hard-drying putty	1 pound
Sandpaper	6 sheets
Color, per coat	¾ pint
Varnish color, 2 coats	1 quart
Clear rubbing varnish	1 pint
Finishing varnish	1¼ pints

Chassis

Lead, mixed ready for use	¾ quart
Hard-drying putty	½ pound
Sandpaper	4 sheets
Color, per coat	1 pint
Varnish color, one coat	1¼ pints
Clear rubbing varnish	1¼ pints
Finishing varnish	1½ pints

Array of Test Data of Many Touring Car Motors Showing Need of New Formulas for Power Ratings—Pointers from Berlin on Safe Construction of Garages—Dr. Riedler's Scientific Valuation of Cars

POWER of Modern Motors—In 1906 the Automobile Club of France adopted the formula $P = 0.0028\ D_2$ for estimating the power developed in each of the cylinders of an automobile motor. For taxation purposes the French government adopted a variation of this formula indicating a horsepower about 17 per cent. smaller. Since that time many different formulas have been proposed in which not only the diameter of the cylinder D but also the stroke L is considered. The Imperial German Automobile Club states that the formula used for taxation purposes in Germany is $P = 0.3\ nD^2L$, or for a four-cylinder motor $P = 1.2\ D^2L$, but that this is meant to indicate the power available at the rims of the driving wheels. The Royal Automobile Club of London used for some time the formula $P = 0.4\ nD^2$, in which the bore is in inches, while in the German and French notations it is in millimeters. Following laboratory experiments and the widely adopted lengthening of the stroke, the English formula was changed to $P = 0.464\ n(D + L)\ (D - 1.18)$.

Now the French Automobile Club proposes to divide the motors into four classes according to their piston speeds and to include the number of revolutions *w* among the factors considered (see account in these columns, THE AUTOMOBILE, August 8), and pleasure cars constitute two of these classes. In the first class the piston speed is up to 6 meters per second, and in the second class it is above this figure.

As 6 meters per second corresponds to 1,178 feet per minute, while the basis for the American formula is 1,000 feet per minute, the power ratings arrived at according to the proposed French formula would for this reason alone exceed the current American ratings by nearly 20 per cent. if the number of revolutions *w* of the motor were not specifically considered.

The proposed formula for motors in the first class—which are those which afford a comparison with the motors used in American cars—is $P = (n \div 2)\ (D^2Lw \div 10^8)$, or for a 4-cylinder motor $P = 2D^2Lw \div 10^8$.

Transposing this formula into inch measurement, but without considering the small difference between French and American horsepower, it becomes $P = 2D^2Lw \div 6{,}102$, as 1 inch equals 25.4 millimeters and the millimeters in bore and stroke are cubed in the French notation, so that the divisor 10^8 should be divided by the cube of 25.4 which is 16,387. For comparison a 4-cylinder motor of 4-inch bore and 5-inch stroke gives according to the French formula 31.5 horsepowers at 1,200 revolutions per minute and 25.6 horsepowers according to the standard American formula, and, as 1,200 revolutions per minute gives a piston speed of 1,000 feet per minute with a stroke of 5 inches, the two ratings are comparable. It is thus seen that the new method of rating allows a horsepower nearly one-fourth higher than the customary American formula, even where the motor dimensions are conservative, and in the case of a long stroke motor the difference becomes more pronounced.

The basis from which the French formula was evolved is found in actual bench tests of a large number of different motors used in French touring cars of 1911 manufacture. The bench data relating to these motors are given in the appended tables, Nos. 1 and 2. It is noted that many among the motors listed in the tables have a piston speed in excess of 6 meters per second and these are in the second class for which the French formula is written with a divisor of 1.9 instead of 2. For comparison, the last column in the tables gives the rating which the motor in each case would have under the standard American formula $P = nD^2 \div 2.5$.

For truck and omnibus motors in which the average piston pressure is higher than the average in touring car motors, it is found that the French formula should be figured with a divisor of 1.8 instead of 2, and this conclusion is based on the test data obtained with the truck, omnibus and delivery vehicle motors listed in Table No. 3 (see page 527).—From *Bulletin Officiel*, June.

TABLE NO. 2—BENCH DATA OF FRENCH 1911 TOURING CAR MOTORS WITH 1, 2, 6 OR 8 CYLINDERS

Bore in m/m D	Stroke in m/m L	Revolutions per Minute W	Horsepower P	Piston Speed in Meters per Second	Mean Piston Pressure in Kg cm2	American Rating in Horsepower
			Two-Cylinder Motors			
125	160	800	16, 5	4, 3	5, 2	19.10
90	130	1450	14, 5	6, 3	5, 9	10
85	150	1400	16	7	6, 6	9.12
80	120	1400	11	5, 6	6, 4	7.90
80	120	1200	9	4, 8	6, 2	7.90
75	110	1800	9	6, 6	5	7.16
75	130	1730	14	7, 5	7	7.16
75	150	1400	12	7	6, 4	7.16
75	120	1200	8	4, 8	6, 2	7.16
75	130	1200	9	5, 2	4, 5	7.16
66	120	1400	6, 9	5, 6	5, 4	5.25
			One-Cylinder Motors			
110	110	1400	9	5, 1	6	7.50
90	150	1400	8, 8	7	5, 9	5.
84	130	1400	5, 1	6, 1	4, 5	4.50
80	140	1300	6	6	6, 6	4.
			Six-Cylinder Motors			
80	140	1200	24	5, 6	7	4.
80	120	1600	35	6, 4	5, 9	24.
80	148	1600	40	7, 9	5, 5	24.
75	120	1600	29	6, 4	5, 6	21.20
66	125	1400	15	5, 8	6, 2	15.75
			Eight-Cylinder Motor			
70	130	1400	34, 3	6, 1	5, 6	24.20

REGULATIONS for Garages—In Berlin the police supervise the observance of rules relating to buildings and fire risks, and this year new rules have been promulgated for garages which are found to have a bearing on the most desirable architecture of dwellings as well as business buildings in any country. They are rendered practically in full in the following, and are applicable in all cases where the total capacity of the fuel tanks in automobiles stored in one room amounts to more than 15 kilograms.

Whenever possible motor vehicles are to be stored in closed rooms and in special buildings.

The use of basements is admissible in the following cases:

(1) PRIVATE GARAGES—When the basement rooms are accessory to dwelling rooms on the same plot and the vehicles serve for the personal use of the resident, and then under the following special conditions: (a) At most two cars must be placed in each car compartment; (b) the walls and roofs of each compartment must be fireproof; (c) automatic ventilation of the floor must be provided; (d) the car compartments must not be connected with other basement rooms; (e) they must be accessible by means of an inclined driveway or an elevator; if by an elevator, there must be a specially secured rear exit to the open air, and this may also be demanded if the entrance is by driveway; (f) more than 8 cars must not be placed in the basement rooms of one building.

(2) BUSINESS GARAGES—(a) If the storage rooms are placed under yards or under buildings which preferably are used for automobile traffic and at all events only for business; (b) they must not be connected with the upper stories; (c) they must have two entrance driveways in different directions and in addition be provided with a sufficient number of rear exits to the open air.

Walls, roofs and windows—(a) The outer walls of garage rooms must be solid. (b) Each room must have fireproof ceiling and fireproof, unbroken partition walls at least 10 centimeters thick. (c) Windows and skylights must be made of fireproof glass (for example Siemens-Drahtglas, Electroglas, Mechanoglas, Solfacglas, Galvanoglas) in iron frames.

An exception is allowed for special single-story garage buildings whose outer walls are at least 6 meters from doors and windows in other buildings and if no dwelling rooms are arranged over the storage rooms. These need not be fireproof or equipped with special glass, but if these buildings are more than 20 meters long a fire wall must extend above the roof for every 20 meters of length.

Repair shops must be separated from storage rooms by unbroken fireproof walls of at least 10 centimeters thickness.

Number of cars stored—As a rule not more than 3 cars must be stored in the same compartment; in the special cases above mentioned only 2.

Floors—The floor must be incombustible and must not absorb oil. It must in each compartment drain toward a pit-like depression under the stand of the car and must slope upward toward the entrance.

Doors—(a) Doors in front walls must open outwardly. (b) The wall over doors and windows and underneath dwelling rooms must be fireproof and unbroken to a height of 1.1 meter, and, if this is not possible, protection must be provided by means of an incombustible shutter in the door or window frame capable of being raised on hinges, or a roof 1.1 meter broad must be placed over the opening on the outside of the building, so arranged that it may easily be clapped down. The special glasses mentioned may be used for these purposes.

Heating—Fireplaces must not be used in storage rooms. Heating by saturated steam or hot water is permitted, but the radiators and pipes must be protected by wire netting or perforated sheet iron at a suitable distance.

Lighting—(a) The lighting of the premises must be effected by incandescent lamps operating without access of air and inclosed in tight-fitting globes which also inclose the bulb frames; or else it must be effected by means placed outside of the storage room and securely separated from it. In other features the rules of the Society of German Electrotechnicians are to be followed. (b) Where push-contact lamps cannot be dispensed with for business reasons, such lamps are admissible if placed at least 1.5 meter above the floor and of the construction especially permitted by the police. (The permitted constructions are the Eicken, the Southwest Electric company's and the Bergmann Electric company's types). (c) The car storage room must be entered only with electric or Davy safety lamps. (d) The lighting of fire or light, lighting or extinguishing of vehicle lamps and also smoking are prohibited, and this must be made known conspicuously at entrance doors.

Ventilation—Ample provision must be made for carrying into the open all gases which may settle along the floors.

Storage of fuel—The ordinary police regulations relating to the storage of mineral oils are ruling, and in the storage rooms and repair shops neither full nor empty gasoline or similar cans nor oil-soaked rags must be stored.

Storage above the ground floor—When motor vehicles are stored above the ground floor the following additional demands are made: (a) Elevators for motor cars must be outside of the building. (b) The ceilings of each floor must be unbroken. (c) All exits are to be provided with ground-joists of incombustible and impervious material and of sufficient height. (d) The storage rooms must have a sufficient number of exits and at least two, as far one from the other as possible and leading to difficult conditions, the police reserve the right to make special rooms must have exits to special stairways.

Large plants—In the case of large establishments or difficult conditions, the police reserves the right to make special demands.

TABLE NO. 1—BENCH DATA OF FRENCH 1911 4-CYLINDER TOURING CAR MOTORS

Bore in m/m D	Stroke in m/m L	Revolutions per Minute W	Horse-power P	Piston Speed in Meters per Second	Mean Piston Pressure in Kg cm2	American Rating in Horse-power
160	180	1112	98, 5	6, 7	6	62.40
135	140	1308	56, 5	6, 1	5, 3	44.
130	200	1200	60	8	4, 6	42.40
130	140	1200	50	5, 6	5, 5	42.40
130	150	1380	70	6, 9	5, 9	42.40
125	150	1400	60	7	5, 7	40.
120	140	1000	30	4, 7	4, 6	36.
120	144	1400	45	6, 7	4, 9	36.
120	140	1300	40	6	4, 8	36.
120	160	1200	44	6, 4	5	36.
110	150	1380	44	6, 9	5, 5	30.50
110	160	1400	52	7, 5	6	30.50
110	110	1370	28, 1	5	4, 9	30.50
105	150	1500	53	7, 5	6, 7	27.25
100	140	1450	38	6, 8	5, 8	24.
100	160	1400	43	7, 5	6	24.
100	140	1200	30	5, 6	5, 6	24.
100	140	1400	38	6, 5	5, 1	24.
100	140	1400	35	6, 5	5, 6	24.
100	140	1200	26	5, 6	4, 8	24.
100	120	1128	21, 7	4, 5	5	24.
100	140	1574	37,34	7, 3	5, 9	24.
100	130	900	24	3, 9	5, 9	24.
100	140	1100	26	5, 1	4, 9	24.
100	140	1800	40	8, 4	4, 5	24.
100	140	1400	33, 5	6, 5	4, 9	24.
95	130	1450	34	6, 3	6, 2	22.50
92	150	1500	38	7, 5	6, 3	20.25
90	130	1250	25	5, 4	6	20.
90	160	1400	19	7, 5	6, 6	20.
90	150	1500	36	7, 5	6, 2	20.
90	140	1200	22	5, 6	5, 1	20.
90	160	1700	45	9	6, 4	20.
90	140	1500	30	7	5, 5	20.
90	130	900	19	3, 9	5, 7	20.
90	130	1500	30	6, 5	6	20.
85	130	1450	28, 5	6, 3	6, 5	18.25
85	140	1500	33	7	6, 8	18.25
84	130	1200	18, 1	5, 2		18.
80	140	1500	28	7	6, 5	15.75
80	140	1500	24	7	5, 6	15.75
80	120	1200	15	4, 8	5, 1	15.75
80	160	1400	15, 2	7, 5	6, 6	15.75
80	120	1800	21	7, 2	4, 8	15.75
80	130	1730	29	7, 5	6, 3	15.75
80	120	1200	15	4, 8	5, 1	15.75
80	120	1200	14	4, 8	4, 8	15.75
80	120	1600	22	6, 4	5, 6	15.75
80	148	1600	28	7, 9	5, 8	15.75
80	120	1450	18, 3	5, 8	5, 1	15.75
80	160	1200	20	6, 4	5, 1	15.75
80	120	1671	20, 5	6, 7	5	15.75
80	120	1000	13	4	4. 8	15.75
80	140	1400	23, 3	6, 5	5, 3	15.75
75	110	1600	18, 2	5, 9	5, 7	14.30
75	120	1250	15, 5	5	5, 8	14.30
75	120	1400	13	5, 6	4, 3	14.30
75	140	1300	15, 2			14.30
72	120	1600	18	6, 4	5, 7	13.10
70	170	1700	20	9, 6	4, 4	12.10
70	150	1400	10, 8	7	6, 6	12.10
70	110	1600	15	5, 9	5, 4	12.10
70	130	1730	24	7, 5	6, 8	12.10
70	110	1200	11	4, 4	5, 3	12.10
70	100	1500	12, 5	5	5, 3	12.10
70	130	1400	18	6, 1	5, 7	12.10
66	120	1400	14, 9	5, 6	5, 8	10.50
65	110	1400	10, 5	5, 1	5, 1	10.10
65	130	1600	18	6, 9	6, 4	10.10
65	120	1600	15	6, 4	5, 8	10.10
65	100	1800	11			10.10
62	100	1700	10, 5	5, 7	5	9.
62	110	1400	8, 5	5, 1	4, 5	9.
60	120	1800	13	7, 2	5, 2	8.
60	100	1800	9			8

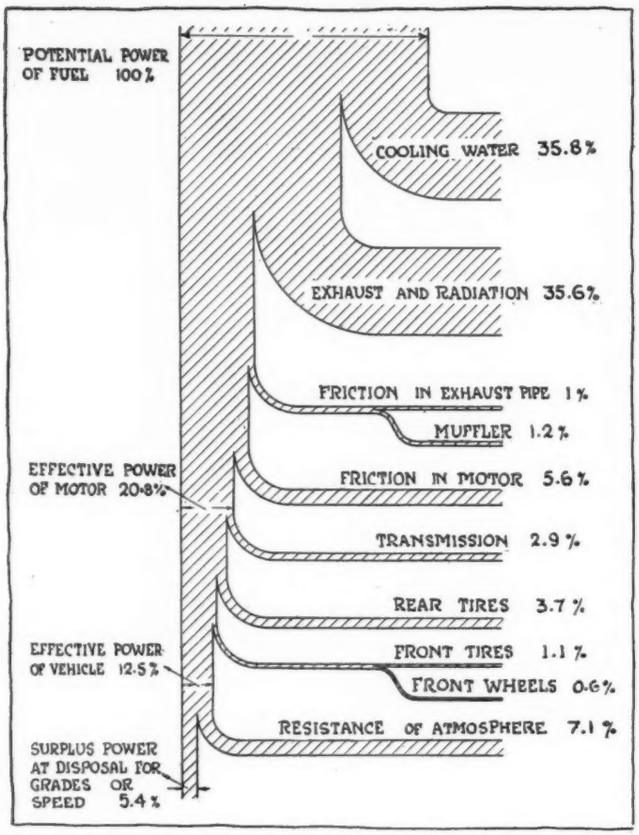


Fig. 1—Wastes and frictions in 30-horsepower car going at 60 kilometers per hour

Fire Extinguishers—The provision of fire extinguishers, such as chemical preparations, sand and hydrants, is recommended for small plants and required of medium and large establishments.

Sewerage—A special permit must be obtained from the police sanctioning the drainage system.—From *Zeitschrift des Mitteleuropäischen Motorwagen Vereins*, middle of August.

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DIAGRAMS of Wastes and Frictions—Among attempted scientific investigations of automobile values on a basis of tests of materials, motors and complete vehicles, none have attracted so much attention or given rise to so many dissenting opinions as the work of Professor Dr. Riedler conducted largely at the Royal Technical Highschool of Berlin and accounted for in a book called *Wissenschaftliche Automobil-Wertung* (Scientific Automobile Valuation), which has also been translated into French. The accompanying diagrams, Figs. 1 and 2, are taken from a review of this book and may be assumed to represent the thermal wastes and different forms of friction which occur in a car at two widely varying speeds as accurately as these important factors may be determined.

In Fig. 1 the heat units contained in the fuel are taken as a basis, and it is shown what becomes of them in a car of 30 horsepower operated at a speed of 60 kilometers per hour. The enormous percentages which go to waste in the cooling-water, by way of the radiator, and in the exhaust gases point the way for the very ambitious inventors who may eventually succeed in producing an internal combustion motor which, like the steam engine, may be protected against the loss of heat instead of being purposely exposed to it. The transmission, on the other hand, is found to consume only about 3 per cent. of the fuel's power value, on direct drive, but this is equal to about 15 per cent. of the effective motor power, since the motor does not transform more than 20.8 per cent. of the fuel into work. In another instance Dr. Riedler found, however, that 27 per cent. was utilized, but that was the maximum. The value of 5.6 per cent. for friction in the motor, which means largely piston friction, equals a waste at this point amounting to about 28 per cent. of the effective motor power. If it were reduced to one-half, as might perhaps be accomplished by a different piston design or material, by improved lubrication and by offsetting of the crankshaft, the effective motor power should thus be increased 14 per cent. at ordinary fast traveling speeds. It is stated that in the case represented in Fig. 2 the loss due to friction in the motor, which is not shown in the diagram, amounted to 18.5 horsepower, and this figure is not proportionately larger than the figure taken from Fig. 1, while the vehicle in this case is a 75-horsepower Adler racing car going at 114 kilometers per hour and with a motor turning at 2200 revolutions per minute. From this it would seem either that friction in the motor does not increase with motor speed and power, or else that the racing motor in question was distinctly superior on the point of friction to the 30-horsepower motor in the other car.

In Fig. 2 the losses are not traced back to the fuel, but only to the effective motor power. If it is assumed that the latter also in this case is only one-fifth of the fuel power, the percentages of the mechanical losses and of the air resistance are proportionately five times higher than in the first case and should be divided by 5, if the losses in the two cases are to be compared. The form of the diagram shows that it represents top speed. There is no power to spare for grades unless the speed is first reduced. The 48 per cent. air resistance is the last factor in holding the car back. It might be expected to be nearly 4 times as great as the air resistance scheduled on Fig. 1, as the car speed is nearly double, but the powers at work are also very different, while the shape of the racing car is the more favorable of the two, and consequently the actual increase in the air resistance by passing from 60 to 114 kilometers per hour—in two different cars—is found by Dr. Riedler's test to amount to little more than 33 per cent. of the utilized horsepower. That the tires on the rear wheels consume about 18.5 per cent. of the available power in one case and 26.7 per cent. in the other case may seem astonishing, but these figures include the bearing friction and the air resistance to the rotation of the wheels.

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Calculation of Centrifugal Pump Throw—An analysis of the unknown factors in the fire engine work that may be accomplished by the use of centrifugal pumps, involving also a criticism of existing constructions, is presented in a book by Prof. H. C. A. Ludewig published by M. Krayn, Berlin. The work is based on tests.—From *Die Turbine*, August 20.

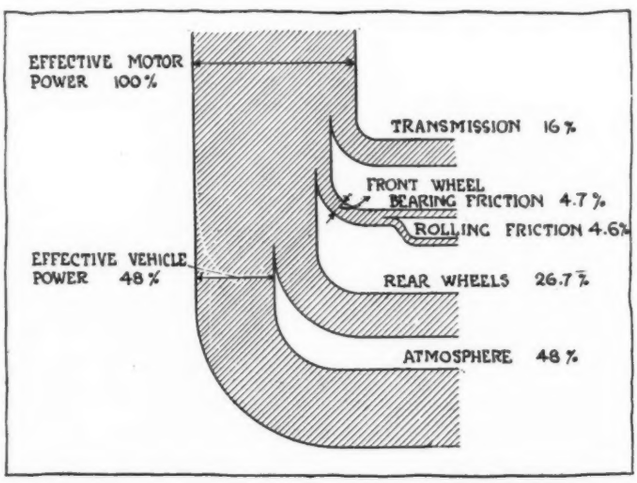


Fig. 2—Diagram of motor power utilization in 75-horsepower car at 114 kilometers per hour

Discuss Metric System

Several Engineers Prominent in the Automobile Industry Give Their Views on the Measurement Situation

One Considers English System Just as Good, While Others Think the Change Impossible

SINCE publishing the two articles on the Metric and English systems of measurements in THE AUTOMOBILE for August 22 and 29, several letters have come in from eminent automobile engineers discussing the two systems, the practicability of their adoption, and various phases of the situation. Four of the most interesting of these communications are given herewith.

V. A. Longaker, of the American Motors Company, believes our present system as good as the metric. He says: "Notwithstanding the fact that the United States Government legalized the metric system in 1866, it has not made very great strides. I realize that the system is very strongly recommended abroad, but going into the matter thoroughly and viewing it from every standpoint it would appear that while it has some advantages over the English system, at the same time it has its disadvantages as well in that it has not eliminated the multiples of three or reduced the necessity of prime numbers.

"It would appear that in this country the growing practice of subdividing the inch by thousandths gives us as good a basis of measurement as the metric system, and avoids the necessity of throwing out of service millions of dollars' worth of tools that are now in the hands of workmen that would be valueless if the metric system was to go into full recognition.

"Our shop superintendent is of the opinion that the crying need at the present time is the abolishment of many thread sheet metal and wire gauge standards now in general use. If these could be standardized it would be a step in the right direction. My personal opinion is that the thing for us to do is to work out the evils that are of crying need and let the metric standard force itself upon us gradually."

All Industries Must Agree

A. Schimpff, of the engineering department of the Schacht Company, believes a change would be difficult. A part of his statement is as follows: "The metric system must be acknowledged the simplest and easiest method of calculation, inasmuch as its denominations increase or decrease decimally by the factor of 10 with enumerations defining their respective worth, thereby eliminating fractions and various terms used in our present method. If adopted in America and put to general use, other methods being abolished, the metric system would in our opinion be a success, although it would cause years of labor and expense on account of new machinery, tools, etc., that would be required. For one industry alone to take up this system would add to it extra work, as it would still have to maintain its present method in order to interchange with like industries that have not taken up the metric system.

"As far as foreign export of automobiles is concerned it would seem the most reasonable to us to have required data and measurements converted into the metric system just as you would translate one language into another. For instance, when medicine concerns put directions in packages for export they give the directions in four or five different languages. In short, it would be as serious a change as when the Big Bull Moose recently tried to change our spelling. It would cause no little amount of trouble among those who are thoroughly familiar with our present system and knowing nothing of the metric, it certainly seems useless to make a change just now. Of course one could debate on this subject for days, but just at the present time we believe the disadvantages would outweigh the advantages."

David Ferguson, of the Pierce Arrow engineering staff, believes an attempt to change would mean the loss of thousands of dollars. He says: "We think that there are no two opinions as to the advantages of the metric system were it not for the fact that all existing factories have had the latter in use so long that they would look upon a change now almost with dread. We, ourselves, have been engaged in the automobile industry for 11 years and during that time have made a great many models, all of which are still running, and there is a vast amount of work required in making up new parts for these, so that if we were to adopt the metric system in the near future we would still have to work to the old system for repairs. This would cause endless confusion for everyone concerned.

Change Would Involve Too Much

We have thousands of dollars invested in tools, jigs, gauges, etc., on the old system so that the idea of a change appears appalling. We think that all manufacturers in a country should adopt that country's system of measurements, and we do not think it advisable for a few firms either individually or collectively to deviate from this until such time as the country at large adopts a new standard. There are too many systems at present, and the A. L. A. M. did a splendid work when it standardized bolts, nuts and screws.

"The owners of foreign cars in this country often have great difficulty in replacing a worn or a broken part because of its metric measurements, and it would place owners of a domestic machine in the same position, especially in out-of-the-way places, until such time as this system came into very extended use."

Howard Marmon, of the Nordyke & Marmon Company, does not believe it would be possible to make the change for the following reasons:

"I do not believe there is any argument possible concerning the intrinsic merits of the metric system, as compared with the system we have now in use, but, practically, do not believe that it would be possible to adopt the metric system in any factories now running on the inch and foot and pound methods because of the immense number of tools, jigs, drawings, etc., that would immediately become valueless, as in my opinion it would not be sufficient to simply transpose inch measurements to the metric equivalent.

(*See Text on page* 524)

TABLE NO. 3—BENCH DATA OF FRENCH TRUCK AND OMNIBUS MOTORS

Bore in m/m D	Stroke in m/m L	Revolutions per Minute W	Horsepower P	Piston Speed in Meters per Second	Mean Piston Pressure in Kg cm2	American Rating in Horsepower
			Four-Cylinder Motors			
145	145	1050	55	5, 1	5, 4	52.12
130	140	900	43			42.
125	140	900	40	4, 2	6, 4	38.65
110	140	860	25, 5	4	4, 9	30.
105	160	1000	32			27.25
100	180	1000	36	6	5, 7	24.50
100	120	1000	22	4	5, 8	24.50
95	130	1100	22			22.50
90	140	1100	26	5, 1	6, 5	20.
90	120	1500	28	6	6	20.
85	130	1200	21, 5	5, 2	6	18.25
84	130	1200	18			18.
			Three-Cylinder Motor			
145	145	1050	40	5, 1	5, 2	39.20
			Two-Cylinder Motors			
145	145	1050	30	5, 1	5, 8	26.15
100	160	1050	15, 5	5, 6	5, 8	12.

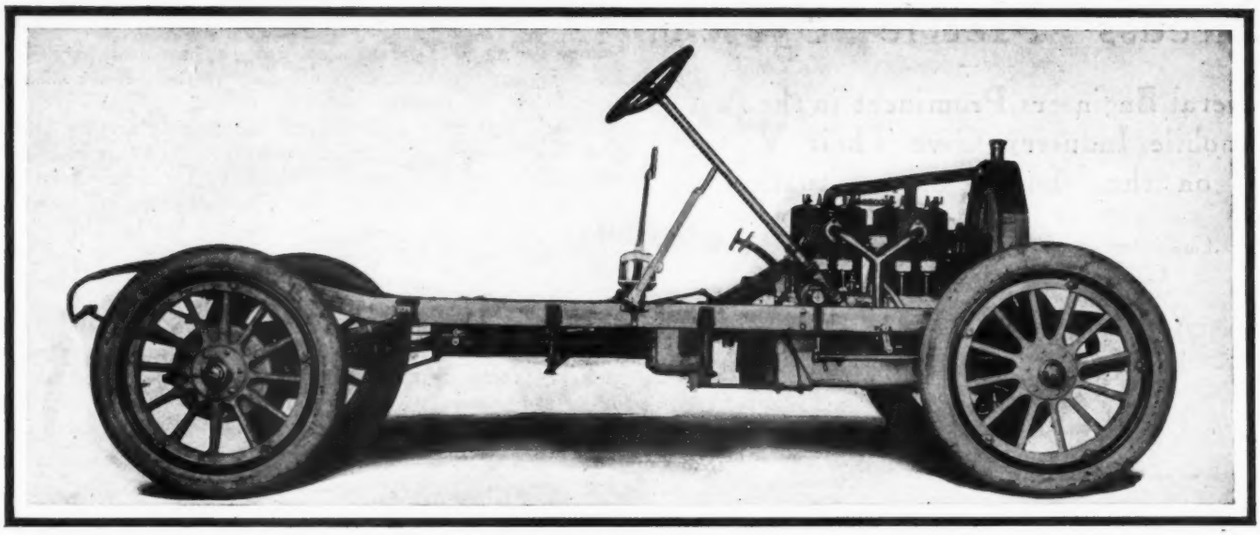


Fig. 1—Stripped chassis of the Haynes car. Note teeth on the flywheel for starting system

Haynes Has Starter

Model 22 for 1913 Has Few Changes, Modification of the Suspension Being Among the Most Important

Fig. 2—Partial view of the oil pump

FOR the season of 1913 the Haynes Automobile Company, Kokomo, Ind., will put on the market its first car equipped with a self-starter. For a long time the engineering staff has been experimenting with starters and, although it has been known that eventually the Haynes cars would be so equipped, it remained for the model 22 to bring out the system in all its detail. That they have the courage of their convictions is shown by the fact that the car is not equipped with a starting crank. The new car is a continuation of the model 21 with many added refinements of a minor nature. The oiling system has been changed slightly, the oil pump now being located at the top and outside of the crankcase, instead of within it at the bottom. This gives a little better arrangement as regards accessibility. The rear spring suspension is also changed, the modification being the attachment of the spring hanger bracket to the end of the frame, Fig. 11. The three lower spring leaves in the upper set have been continued back of the clip for a distance of 3 1-2 inches to act as a stop by striking on a rubber bumper located at the center of the lower half of the spring. The spring suspension at the front end has also a minor change, the frame end being dropped 2 inches lower than in the model 21.

In the model 22, the motor is of the T-head type. The four cylinders are cast in pairs and are spaced to give a three-bearing crankshaft. The bore of the motor is 4 1-2 inches and the stroke 5 1-2 inches. The cylinders are gray iron castings with open spaces between the lower ends and are designed with a view of distributing the waterjacketing over every part exposed to the heat of the motor. A feature of the waterjackets which is peculiar to Haynes practice, and which is continued in model 22,

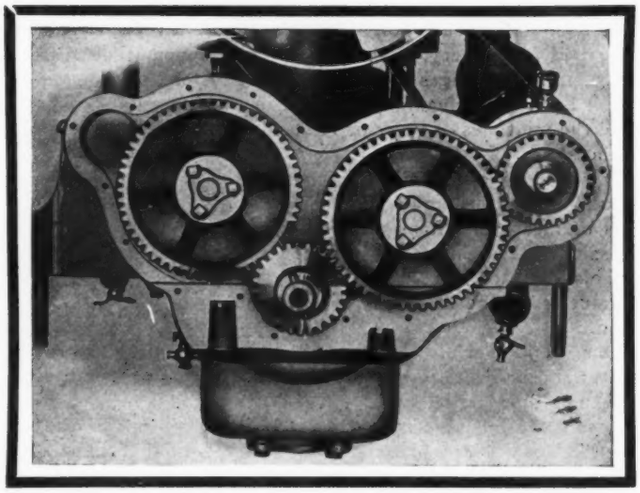


Fig. 3—The timing gear train of the T-head Haynes car for 1913

is that the sections over the cylinders are removable and integral with the cylinder branches of the water manifolds. This renders it possible to clean out the waterjacketing at any time by simply removing the stud bolts which pass through the waterjackets and into bosses on the top of the combustion spaces of the cylinders. This arrangement gives a water circulating space which is unusually free from obstructions, allowing a clear passage of water through the jackets. The jacketing around the valves is particularly noticeable on account of its great sectional area and the fact that the stems are cooled nearly to the head of the valve.

The valves are all of the same diameter, this dimension being 2 1-4 inches. The lift of all the valves is 5-16 inch. The valve action is housed within a cylindrical casing, as may be seen in Fig. 5. A removable cover plate permits of the adjustment of the valves, however, so that wear may be compensated for by virtually lengthening the stem of the valve. The latter adjustment is made by turning the nuts shown in the right view of the power plant, Fig. 5. A feature of the valve action, outside of the large capacity of the waterjackets mentioned above, is the length of the guides. These extend to the point where the curvature of the valve head commences and tend to materially reduce any warping action that the intense heat of combustion would exert on the exposed metal.

The pistons are of the same material as the cylinders, being gray iron castings. They have four 1-4-inch rings, all of which

are located above the wristpin. The wristpin passes through the piston, being held in the usual manner by bosses cast in the latter. A difference in the method of supporting the wristpin may be noted, however. That is, instead of preventing the pin from oscillating with the connecting-rod by a stud bolt or a pin through one of the bosses, there is a stud with a nut and lock nut through each piston boss, giving a double assurance against the wristpin working loose and developing trouble. The wristpin is hollow and provides a wide bearing space with ample clearance between the bearing itself and the piston bushings. The vertical plane of the wristpin is offset 1-2 inch from the plane of the crankshaft to secure a maximum of turning effort at the beginning of combustion in the motor cylinder.

The connecting-rods are of I-beam section, the upper bearing being 2 1-4 inches in width and the lower or crankpin bearing 3 inches in length. The dimensions of the main bearings are as follows: Front, 4 1-2 inches; center, 3 inches; rear, 5 inches. The diameter of the crankshaft is 2 inches.

The crankcase is in two parts. The upper part forms the foundation for the cylinders and also carries the four supports by which the motor is held. In view of this, the aluminum casting has been thickened locally to take care of the strains it is called upon to bear. The ribs on this casting are also numerous as it has to sustain the weight and vibrations of the motor besides the strains falling upon the supports when traversing rough roads. The upper halves of the crankshaft bearings are carried in bridges in this casting. The lower half of the crankcase carries the bottom halves of the crankshaft bearings and also the oil reservoir and splash troughs, which will be touched upon later. This part of the crankcase is also of aluminum and is shown in Fig. 4.

The splash system of lubrication is used entirely as the oil is not forced to any bearing. The oil is carried in the crankcase reservoir and is lifted from there by the pump which is shown in Fig. 2. This pump carries the oil to the longitudinal pipe illustrated in Fig. 4, where the entire lubricating system is shown in detail. The pump is a plunger attached directly over the intake valve camshaft and is operated by an eccentric from this shaft. The spring which will be noted in the view of the pump is for the purpose of keeping the plunger seated against the eccentric so that the drive will be positive and there will be no noise. This spring, it will be observed, works on an inner wall of the pump casting and does not touch the plunger so that there is no danger of the latter becoming scratched through the action of the spring. The plunger casing is also protected by this arrangement and the danger of marring the walls of this housing is eliminated so that the pump cannot become leaky due to the scoring of the walls.

Returning to the longitudinal pipe into which the oil is forced after leaving the crankcase, it will be seen that the latter is pierced at four points in its length by circular holes through which the oil is free to pour. These holes are arranged so that there is one below each cylinder and through each hole flows the oil which supplies the particular cylinder beneath which it is located. The bottom part of the crankcase is divided into two parts by a horizontal tray, which is shown in sectional view in Fig. 4. This tray has a wavy contour which forms a set of troughs, one below each cylinder. In each trough there is a standpipe which allows the oil to flow back from the trough to the reservoir beneath the horizontal tray. Each standpipe is located directly beneath the throw of a connecting-rod.

The oil from the longitudinal pipe will fill the trough below each cylinder up to the level of the top of the overflow standpipe. When this point is reached the oil will drop back into the reservoir below and thus automatically keep the oil level constant. There are two scoops on each connecting-rod so arranged that one scoop will pass to either side of the overflow standpipe. As the connecting-rods sweep around, these tubular scoops pass through the oil in the troughs and churn the oil into a spray which is thrown about the entire crankcase and which lubricates the cylinders as well as all the bearings contained in the crankcase. In order that the lubrication of the crankshaft bearings be as positive as they can possibly be made, oil ducts have been cut into the bearing bushings to permit the oil to flow by gravity directly into the bearings. These oil ducts, or passages, are clearly shown in Fig. 4.

The oil returning to the reservoir is cleansed to remove any possible impurities before again being passed through the pump. This is effected by a screen placed around the suction end of the pump. A refinement in the pump itself is the placing of a reservoir in the upper part of the pump which catches the oil and holds it under pressure, thereby giving a constant flow. The oil reservoir is equipped with a float gauge which tells the

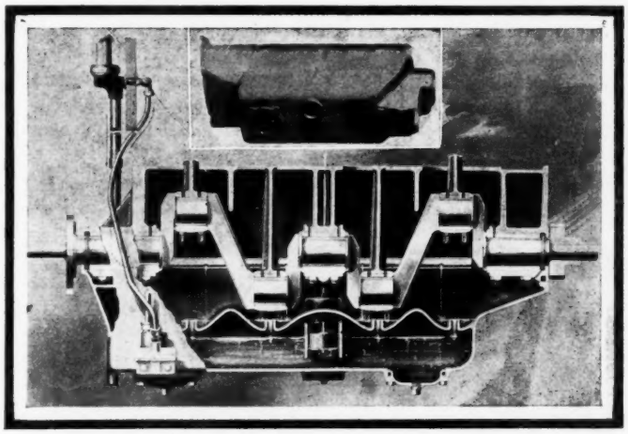


Fig. 4—Two views of the crankcase, showing the oiling system in operation

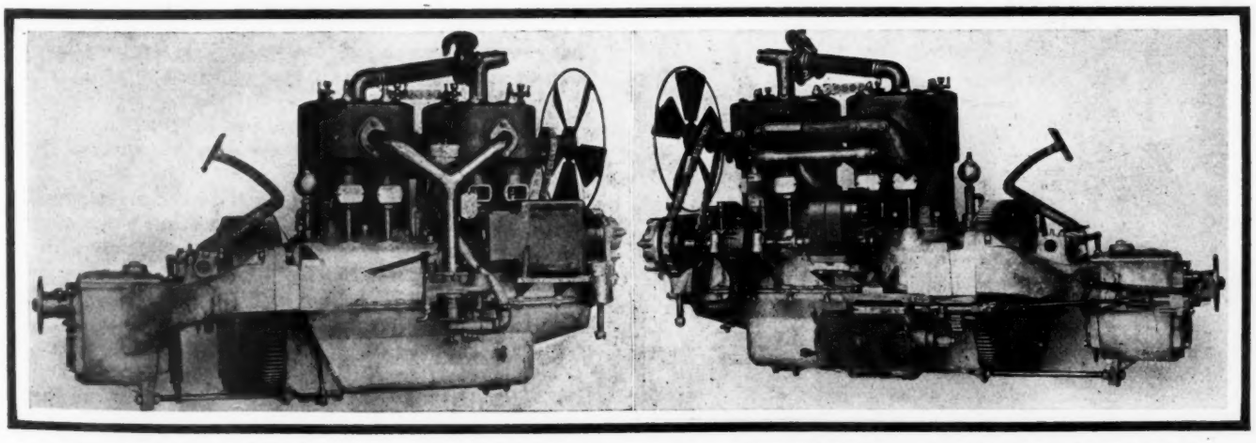


Fig. 5—Right side of motor with valve cover removed.

Fig. 6—Left side of motor, showing mounting of starter

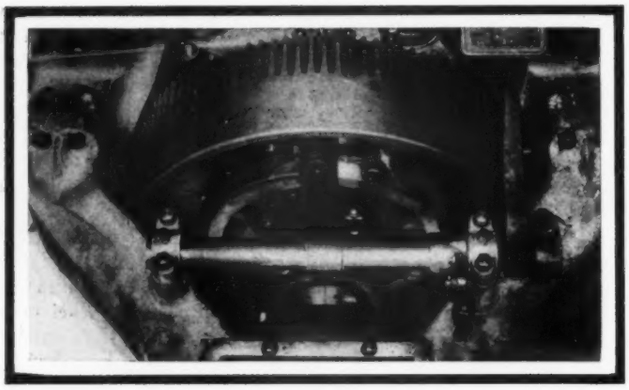


Fig. 7—View of the flywheel operated by the starting motor gears

operator at all times the amount of oil in the crankcase. The gauge consists in a cork float located in the crankcase and held in a cylindrical chamber with a rod extending through the chamber and up through the crankcase to a position between the two cylinder blocks. The gauge may be seen in the views of the oiling system and also in Fig. 5, which shows the right side of the motor.

To prevent the leakage of the oil past the crankshaft at the ends of the crankcase an oil ring is fixed upon the crankshaft turning with it. These rings are located very near to the points on the shaft where it leaves the crankcase and they turn in grooves cut into the crankcase. When the oil works its way out to these rings it is thrown off by centrifugal force and flows back through a small duct to the crankcase. Besides the regular drain plugs in the crankcase through which all the oil may be removed when desired, there are two handholes of large diameter located one at each end of the crankcase. A large plug beneath the float permits the gauge to be taken down when necessary.

The carbureter used on the Haynes model 22 is the 1 3-8-inch Stromberg, model B. This is of the concentric float type without waterjackets. It has separate adjustments for low and high speed and is fitted with a hot-air horn for taking the heated air from around the exhaust pipe and also has a means of closing the air valves to secure a rich mixture for starting. The gasoline feed to the carbureter is by gravity, the tank being located under the front seat with a direct flow to the carbureter.

Fig. 8—Front view of the Haynes model 22 with full equipment

The ignition system employs the Eisemann dual magneto with storage battery for starting. Only one set of spark-plugs is used. The balance of the electric equipment, which includes the lighting and starting system, is of the highest interest as it marks another step in the self-starter field, where a conservative concern is first going over to the self-starter after having refused to furnish one as regular equipment on its previous cars. The system is entirely a Haynes product, being designed at the Kokomo plant by the Haynes engineers. Two views of it are shown in the accompanying illustrations, Figs. 7 and 9. It consists of three parts, a generator, a motor and a storage battery. The operation of the starter is similar to the usual method by which the electric lighting and starting systems are operated. The electric starting motor is geared to the flywheel and turns this over by power derived from the storage battery. When the motor starts under its own power the starting motor is automatically disengaged. When the speed of the car approaches 10 miles an hour the 12-volt generator is cut in and the storage battery commences to be recharged. So that the storage battery cannot discharge back through the generator when the car is standing idle, the automatic cut-out breaks the circuit between the generator and the storage battery. This cut-out is located in a compact box carried on the dashboard. The source of the electric lighting current is the same storage battery as is used for starting. The battery has a capacity of 100 ampere-hours. The starting system is operated from the seat of the car by first placing the switch on the battery side and then placing the right foot on the brake pedal. With the heel of the left foot a lever on the left side of the change gear quadrant is depressed and the change gear lever is then brought into the special starting slot and pushed firmly and quickly down as far as it will go. When the motor starts the handle is released and springs back into neutral position again. There is a mixture control located on the dash by means of which the required rich mixture for starting in cold weather can be furnished. The gearshift quadrant is fitted with a lock by means of which the lever is held in neutral so that it is impossible to operate the car without possessing the key.

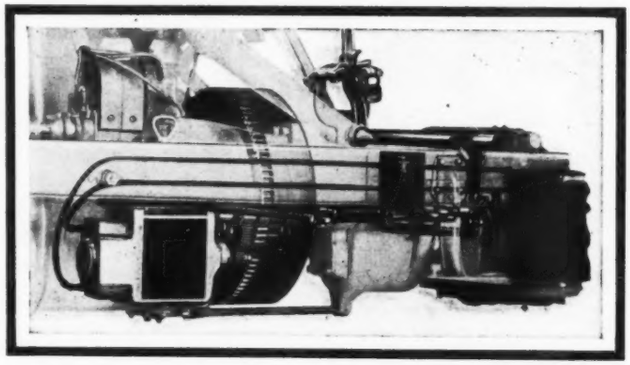


Fig. 9—Arrangement and mounting of the Haynes starting system

As in the past, the Haynes clutch is of the contracting band type. This has been one of the features of Haynes construction for 15 years. It consists of a contracting steel band encircling a hardened steel drum. The latter feature is new this year as up to the present time the drum has been of bronze. The drum is bolted to the flywheel of the motor, while the steel band is keyed to the gearset shaft and drives the gears. When the clutch is engaged the band closes tightly about the drum, but while running free there is no drag at any point as the band is expanded about its entire circumference. The band is forced to contract by a wedge-shaped shipperhead which is tapered on one

side only. This throws a lever one way to engage and another way to disengage the clutch.

On the 1913 model, the three-speed gearset is supported by aluminum arms on the bottom of the motor crankcase. The gearset quadrant is arranged, however, for an extra notch to take care of the starting system. The shafts of the gearset are mounted on roller bearings throughout. From the gearset, the power is transmitted through a universal joint protected by a metal cover to the propeller shaft. Another universal joint, also protected by a metal cover, is located at the rear end of the propeller shaft and transmits the drive directly to the floating Timken rear axle. The material of the propeller shaft is nickel steel and the ends are square to fit the metal-covered universal joints.

The rear construction is clearly shown in Fig. 11. In this view the axle driveshaft is removed. This can be done simply by removing the hub caps and pulling out the axle. The differential housing can be removed by taking out the bolts in the coverplate. This leaves the entire differential exposed to view and permits of adjustment to compensate for wear. The Timken axle is fully adjustable in this direction as both the drive

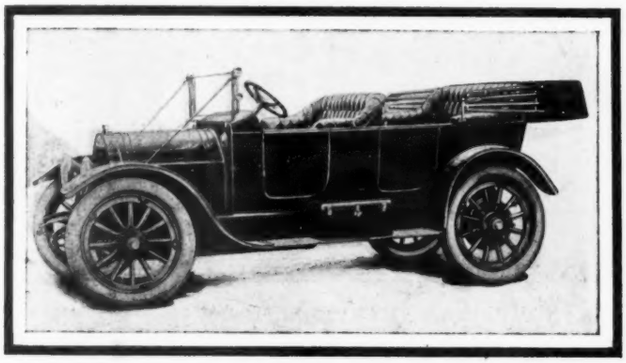


Fig. 10—Side view of the model 22, note long cowl and straight body

pinion and differential wheels can be moved so as to give perfect engagement after either has worn.

The brakes are large and consist of two entirely independent sets. These are shown in Fig. 11. The diameter of the brake drum is 14 inches and the width is 2 1-2 inches. The running set of brakes is of the external contracting type, while the emergency brake set is internal expanding. Extra heavy spiral springs are used in both sets, and which may be seen in the illustration, prevent the brakes from rattling and also eliminate any tendency to drag. The brakes are lined with Raybestos and both sets engage on the same drum, which is located between the two sets. Adjustments on the contracting brake are all external, while those on the internal brake may be made by removing the rear wheel which carries the brake drum attached to it. Other adjustments for wear on the lining or for eliminating lost motion at the levers or through the linkage can be made by means of adjustment points provided on the brake rods. A transverse equalizing bar prevents the brakes from exerting more pressure on one drum than on the other and in this way tends to prevent unequal tire wear to a great extent.

The chassis frame is of pressed steel channel section, having a depth of 4 inches and a flange width of 1 1-2 inches. The frame is toed in at the front a distance of 3 inches to allow of a decrease in the turning radius. The front axle is shown in Fig. 8, which illustrates the entire front of the car. It is of I-beam section and of drop construction. The depth of the axle is 2 inches and it is drop-forged in a single piece, the spring pads being integral. The wheel spindles are 1 5-16 inches in diameter. All bearings are of the Timken roller type.

Wheels are the same both front and rear. They are of the artillery wood type and have twelve spokes. The tires are 36 by 4 1-2 inches front and rear. The springs are semi-elliptic

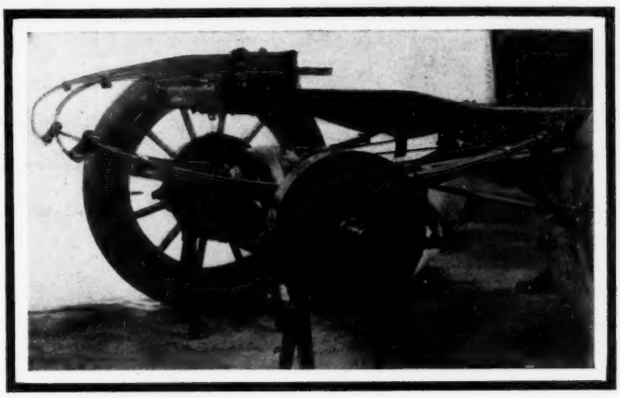


Fig. 11—View of rear system, showing suspension and brakes

in the front and three-quarter elliptic rear. The front springs are 40 inches long and 2 inches in width, while the rear springs are 48 inches long and 2 inches wide. The front springs have seven leaves, while the rear springs have six. The spring shackle bolts are all fitted with grease cups.

A worm and gear type of steering gear is used. There are no modifications in the mechanism since the improved pattern brought out in model 21. The 18-inch steering wheel also introduced in this model is continued.

The body is made throughout of sheet steel. It has fore-doors. The front, side and rear views of the body are shown in Figs. 9, 11 and 13, respectively. The features which will be especially noted are the straight-line construction, the long cowl, method of carrying spare tires and the luxurious upholstery. The leather used throughout is black hand buffed. The spring backs to both seats are filled with curled hair. The body is black and is given eighteen coats of paint, all of which are hand rubbed. The metal work is black enamel and nickel.

This year's equipment includes a silk mohair top, top boot, E. & J. electric headlights, electric starter, electric horn, electric cowl light, glass front, three oil lamps, Warner autometer, bumper rail, horn, coat and foot rails, tire tools, full tool equipment and one extra Baker demountable rim.

Fig. 12—Rear view of 1913 Haynes, showing brackets for tire

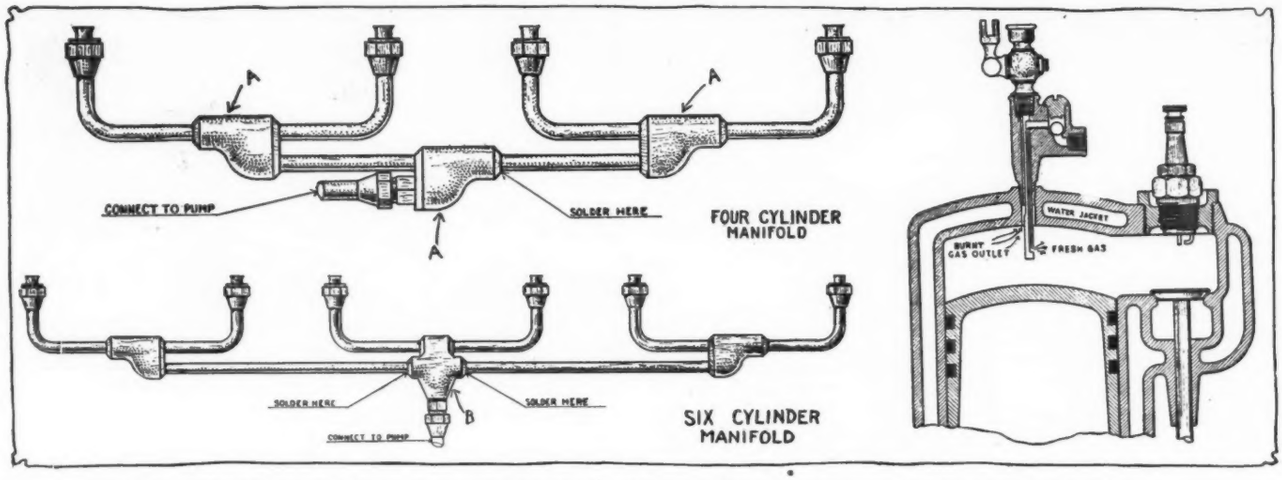


Fig. 1—Starting manifolds used in installing the Shur-Go gasoline apparatus; section through check valve

Shur-Go Starter Employs Gasoline

Consists of Carbureter, Pump and Check Valve—Carbureted Air Injected Into Cylinder Starts Motor

Pump Can Be Used in Connection with Compression Release to Scavenge Cylinders

A STARTER which relies upon carbureted air, the natural fuel of the gasoline motor, for its operation is sure to be of uncommon interest. Such a starter is the Shur-Go, manufactured by the Shur-Go Starter Company of New York City. The installation and the component parts of this starter are shown in the accompanying illustrations. As may be seen, the apparatus consists of a small hand pump located near the driver's seat, a check valve on each cylinder, and the necessary tubing connecting these parts.

The hand pump is connected with the regular gasoline tank, which is located on the suction side of the pump. When the handle of the pump is pulled up a mixture of gasoline and air is drawn up into the barrel of the pump. A downward stroke on the pump forces this mixture into the cylinders, providing the starting charge.

The switch is then turned to the battery position and the charge in the proper cylinder is fired, starting the motor.

Pump Also Scavenges Motor

The pump may also be used as a scavenger before introducing the charge into the cylinder. This is done by opening the compression relief cocks by means of a connecting rod operated from the dash, which permits all the compression cups to be opened at once. The pump is then used to force out the dead gases through the compression relief cocks, which leaves a fresh charge in the cylinder for starting purposes. When there is a quantity of dead gas in the cylinder it will be necessary to force it out in the manner just described before starting. This operation can be done in about 30 seconds by simply opening the compression release, making four or five strokes on the pump, closing the release and then pumping another charge into the cylinders and turning on the switch.

The pipe which leads from the pump to the cylinders runs into a small manifold of special design, depending upon whether the motor is a four or six-cylinder. These two types of manifold are shown in Fig. 1. The connections at A and B must be carefully soldered at the joints so that there is absolutely no leak or the device cannot possibly work. This is a matter entirely of care in the installation, but special emphasis has been laid upon the point by the manufacturers as the device will not operate properly unless a gastight connection is made between all the parts of the manifold.

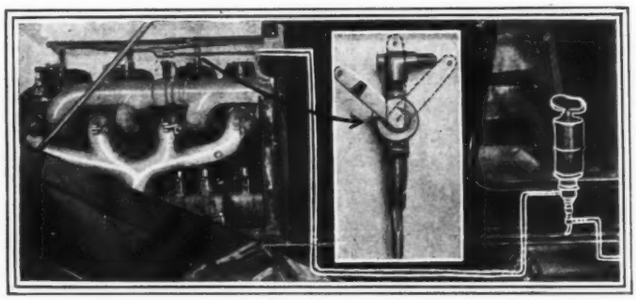


Fig. 2—Installation of device on four-cylinder car with enlargement of cylinder attachment

The combination check valve and compression cock used in connection with the starter is shown in section in Fig. 1 and in an exterior view in Fig. 2. The former shows the different passages for the exit of the burnt gases and the intake of the fresh gas. The ball check which prevents the burnt charge from blowing back along the pipe line to the starter pump is also seen in the sectional view.

The pump is in reality a combination pump and carbureter. The carbureter is located in the base of the pump below the stroke of the plunger. When the plunger of the hand pump is pulled up gasoline is sucked from the tank around a needle valve which is capable of adjustment in the usual manner by turning a handle located beneath the carbureter part of the pump. At the same time, air is drawn in through a separate air valve across the spray of the needle valve and an explosive mixture formed. The carburation is thus effected before the mixture ever enters the pump which sends it to the cylinders. Owing to the agitation of the gas in passing through the pump barrel and along the pipe line the mixture is perfect by the time it is forced into the cylinders.

The air valve in the carbureter may be regulated as well as the needle valve so that the mixture which reaches the cylinders is under control of the operator. The correct mixture once ascertained, however, it will not be necessary to make any changes and lock nuts are provided on both adjustments to hold them permanently in place after they are once set. In installing the device it will be unnecessary to change the factory setting.

Great Britain Has Latest One-Man Top

Rotax Is Opened and Closed by the Driver While He Remains in The Automobile

Simplicity and Practical Design Have Been Combined in Its Constructional Features

AMONG the various devices which have recently been evolved in England with the idea of increasing the comfort of the automobile driver, the Rotax top of the Rotax Motor Accessories Company, 43 Great Eastern street, London, E. C., deserves special mention, as it may be opened and closed by the efforts of a single person without leaving the car.

This object is realized by the peculiar construction of the skeleton of the top, consisting of two series of arms which are attached to the body of the car at four points. In addition to these points of suspension, the front edge of the top is held to the dash by two straps laid through eyes provided thereon.

Operation of the Rotax Top

When closed, the top presents the neat appearance shown in Fig. 1, where all the arms are shown folding upon one another, the material of the top arranging itself between the arms, due to the peculiar method of fastening it to the bows. When the top is to be put up in position, the driver first loosens the straps holding the top down to the body and then takes hold of one of the upper arms, drawing it forward. This results in the position of the top seen in Fig. 2. The end of the longest of the forearms, on each side of the top, is formed with a lateral pin or staple, projecting from the arm. This pin fits into a hook formed by the end of a short, upwardly bent metal arm which is screwed on to the automobile body, directly opposite the fore door. One of these hooks is provided on either side of the car and when the forearms are attached to these hooks, the appearance presented by the top is that seen in Fig. 3. The top is then fully opened by drawing the front forward, which is done when the two tension straps depending from the front top edge are pulled by the driver. As soon as the top is brought into the fully extended position the tension straps are secured to the eyes mentioned above, which are attached to the vertical front board of the cowled dash and in Fig. 4 are concealed by the side lamps.

The downward rear portion of the top is attached to the body by snap locks which pass through metal eyelets attached to the top material. As to the method of attaching the top fabric to the structure or skeleton, this is done by nails along four points of every bow. The bows themselves are of wood, the ends of which are reinforced by steel connections and hinges. All along the edge of the top extends a reinforcing strip of doubly laid fabric and through this are driven the tacks or nails employed to secure the latter to the bows.

The British maker claims that the Rotax top may be opened or closed within a few seconds. While this may be true and naturally present a great advantage over the top which cannot be in or out of position in less than several minutes, there are a few objections to this type. The fact that it is possible to open or close the top from the seat makes it necessary to do without a top cover, which naturally does not improve the appearance of the car. Another doubtful point is whether the average driver will be capable of manipulating the top, on a seven-passenger touring car, without spoiling the upholstery of the front seats. These two points call for improvements of the top, whereby the driver may operate it without getting on the seat, for one thing, while the whole subject of the seat-operated top would receive a considerable advance if the appearance could be brought to be on a par with that of the now conventional type of top which presents a neat and distinguished appearance if it is given suitable attention.

It will depend on whether these little refinements in top construction will be added to the sweeping changes by the makers that the seat-operated top will be more generally introduced in the near future. It stands to reason that every well-to-do automobilist will be ready to pay a slightly higher price to increase the ease of his driver to any appreciable extent, as this course would in turn result in the latter's taking better care of the automobile than if this work is a difficult one.

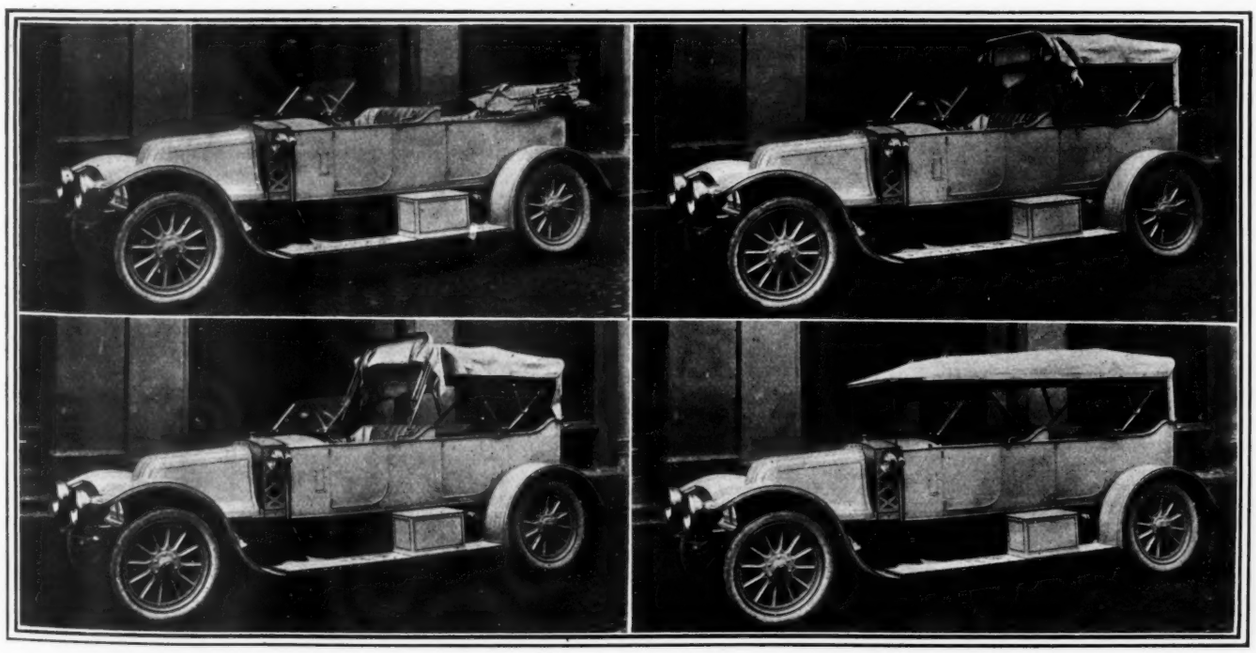


Fig. 1—Showing the Rotax top in closed position on a car
Fig. 2—Top partially pulled up from the closed position
Fig. 3—Top almost in place—front arms hooked onto body
Fig. 4—Showing the top completely opened for service

Record of Shop Materials

Forms Used by Metropolitan Service Departments for Drawing Parts and Materials From Stock Rooms

Methods of Recording Spare Parts Which Are Used in The Repair of Automobiles

THERE is a widely prevalent idea that the automobile repair business is bound to be a loss to anyone engaging in it. This idea is perhaps due to the fact that the repair department, or service department, as it is now most generally called, does not turn out any new products, but merely proposes to put used and injured mechanisms in workable condition again. This sort of business is naturally not as profitable as a factory, where large amounts of materials are handled in the same standardized manner day by day, so that the workmen occupied with the manufacturing operations may do their work rapidly enough for the production of an appreciable profit. In the repair department, however, every job calls for a treatment all its own and individual attention to its requirements, which naturally consumes very much time and a proportionate slice of the profit.

Nevertheless, a considerable degree of economy may be maintained, even in the repair shop, and, as its operations may hardly be standardized, the end cannot be reached except by perfectly utilizing all the time of the workmen and all the material used in the shop. To be in a position of enforcing a course of economy, the service department superintendent must be in the possession of most exact records of the labor and material used in his shop and of their distribution. A number of forms suitable for this work of recording repair shop costs are described and illustrated herewith.

Requisition Is Principal Form

Having taken up keeping records of the time used on repair jobs in the August 29 issue of THE AUTOMOBILE, we will now proceed to review a number of material-recording blanks used by the repair departments conducted in New York by a number of prominent and up-to-date automobile companies.

The present method of recording used material ordinarily embraces the use of a single form, the requisition or stock room order. Few concerns provide for the situation which arises when the stock of the repair department has to be replenished, either on the occasion of an individual repair order or when the clerk notices that his stock of any single article runs low. These concerns use a purchase requisition which is filled in by the clerk and sent to the company's main office, where a purchase order is made out and sent to the dealer, who furnishes the required part to the company.

The requisitions are filled out by the workmen requiring repair parts, are O. K.'d by the foreman and turned over to the stock room clerk, who exchanges them for the part or parts named on them. He also keeps a filing system in which the quantity of every type of part kept in stock is recorded and corrected daily, the parts being piled in bins of consecutive numbers and a card being used for the contents of each bin.

The designs of requisitions used by various companies differ, and, while one would expect that every concern would have a system fitting its needs, this is by no means true. The requisitions used by some large firms are very crude, while, on the other hand, some minor companies, so-called, often use excellent designs, which are adapted for a variety of conditions. It is very natural that the larger the business of a company, the more elaborate should be the design of its requisition. Many large companies, however, consider the repair department an unimportant branch of their business, especially if they have not conducted it for a long time, and this explains the paradoxical condition just outlined.

Simplest Types of Requisitions

Simplicity is one of the features of Form 4, used by the White Company, of New York, whose service department is located at 631 West Fifty-seventh street. It is a thin, white slip, 5½ by 3¾ inches and coming in a book, from which it is detached by tearing a perforation. All slips are numbered consecutively and filled out by the workman who requires material. The data entered on the requisition include the card number, or rather job number, of the repair work which occupies the workman, the date on which the slip is filled out, the nature and quantity of the material required. After filling out the requisition, the workman takes it to the foreman, who O. K.'s it, and then to the stock room clerk, who delivers to him the material which he needs, and files the requisition until the next morning, when he checks it off against the stock file, which he corrects at the same time. After this has been done, the requisitions are sent to the office of the company so that the material used on the various jobs may be charged to the owners of the cars being repaired.

Fully as simple is the requisition design of the Haynes Company's repair shop, 250 West Fifty-fourth street, New York City. This type of requisition, Form 5, is of the same size as

PURCHASE REQUISITION

Date, 191

Quantity On Hand	Quantity Required	Description	Quantity To Order	Order From	Purchase Order No.

Requisitioned by | Approved by | Ordered By

ORDER

Date

To

Address

Passed by	Charge Acct	Quantity Ord.	List	Discount	Net	Amt. Approved by	Sent

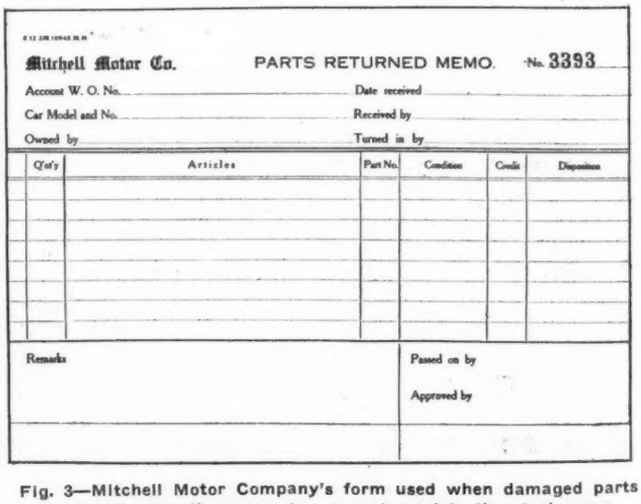
Please furnish the following material, making shipment via

338

American Marion Sales Co.

By

Fig. 1—Purchase requisition of American-Marion Sales Company
Fig. 2—American-Marion Sales Company's purchasing order



Mitchell Motor Co. PARTS RETURNED MEMO. No. 3393

Account W. O. No. Date received

Car Model and No. Received by

Owned by Turned in by

Q'at'y	Articles	Part No.	Condition	Credit	Disposition

Remarks

Passed on by

Approved by

Fig. 3—Mitchell Motor Company's form used when damaged parts replaced under the guarantee are returned to the stock room

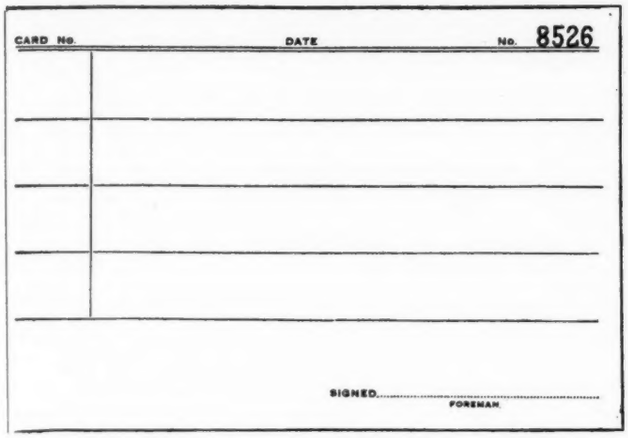


Fig. 4—Requisition used in the shop of the White Company, illustrating a simple design of this form

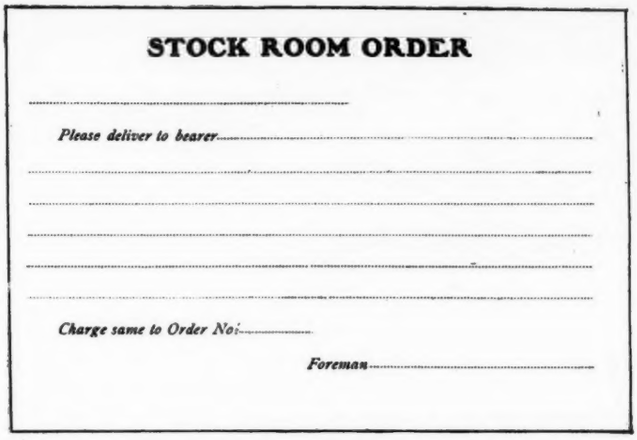


Fig. 5—Another simple type of requisition, used for drawing parts from the stock of the Haynes Company

Form 4, being white with black printing, and provides a space for the material to be drawn from stock, the job number to which the material should be charged, and a space for the signature of the foreman. The date is put down at the top of the slip. Like Form 4, Form 5 comes in pads, and after its use is completed it goes to the office of the company's bookkeeper, who makes a notation of the material used on the account of the customer. Then the requisition is filed away with other requisitions in the order of their dates.

The degree of differentiation in form design, which progresses with the activity of a company's service department, is shown in the next type of blank, Form 10. This design is a requisition used by the Peerless Motor Car Company of New York, 1758 Broadway, whose service branch comprises four departments: Paint, trimming, body and repair, or machine shop, department, which use three distinct forms. The design of all the forms, however, is identical, and the difference lies only in the colors used by the various shops. Not only does this feature provide variety and a means of easily distinguishing the requisitions used by various departments, but, to make sure that no confusion occurs among the different requisitions of the repair departments, every requisition is made with a carbon copy. These copies are also made on slips of various colors, every set of original and copy requisitions coming in a book, from which they are detachable by a perforation. The forms in each book bear consecutive numbers. The colors used for the requisitions of the various departments are as follows: Paint department, original, light blue; copy, ochre; trimming department, copy and original, pink; machine shop, original, lemon colored; duplicate, light blue. The body department uses the same type of requisition as the trimming department, being under the management of the same department head.

All of these requisitions are 7½ by 5¼ inches and printed in black. Spaces are provided for the entries of the repair order number, the date on which the requisition is filled out, the time when the material is to be delivered to the department requiring it; also the description of the part or material to be drawn from stock, and the quantity.

Duplicate Forms Are Often Used

To indicate the cost and the price of parts drawn from stock, two columns marked C.P. and S.P., respectively, are provided on the requisitions. These columns, as well as the one marked Part Number, and in which is entered the number of the bin wherein the part is kept, are filled in by the stock room clerk.

In filling out these requisitions, the workman also enters the model of car for which the part is required, after which he signs his name at the bottom of the form. The latter is then O. K.'d by the foreman and sent to the stock room to be filled. The clerk filling the requisition also signs the order, and after having corrected his stock records from the requisitions which he has filled during the previous day, all these requisitions are sent to the bookkeeper's office. The process of filling the requisitions and delivering the material to the department requiring it is the same in all cases, whether the material is demanded by the paint, trimming, body or machine shop.

A very similar type of blank, Form 8, is used by the New York service department of the Oakland Motor Company. This form comes in books 8⅝ by 5½ inches and is filled out in duplicate, the original going to the stock room, while the carbon copy remains in the book. The original is printed on white paper, while the carbon copy is printed on a light sort of yellow paper. Both forms are numbered consecutively. This form differs in no essential way from Form 10, described above, and contains spaces for the quantity, bin number and nature of the material required by the shop, and two blank columns in which the cost of the material and the price at which it is to be charged are entered. Job number, date and signature of the foreman are also provided for by spaces, while the workman filling out the requisition, and the stock room clerk supplying the material, sign the form at any suitable place.

Parties Concerned Sign Blanks

A smaller type of form, including most of points covered by Forms 8 and 10, is Form 6, used by the Mitchell Motor Company, of New York, 419 West Fifty-fifth street. The blank, Form 6, used by this company, is 6 by 4¼ inches and comes in pads, each white original blank being followed by

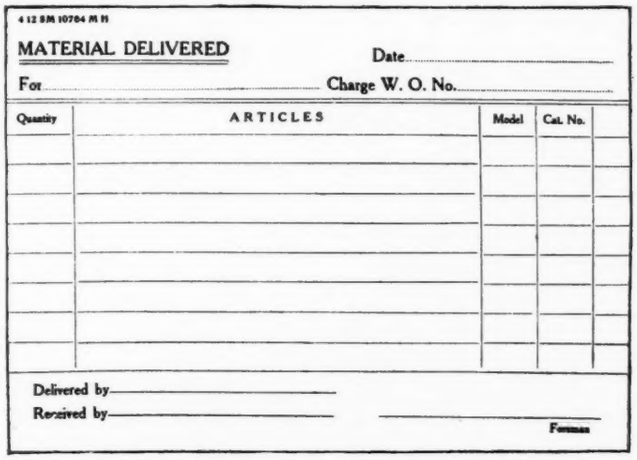


Fig. 6—Requisition blank of the Mitchell Motor Company, showing differentiation of data

MATERIAL USED

Q'n'ty	Articles	C NC	Price	Amount	Q'n'ty	Articles	C NC	Price	Amount

Fig. 7—Blank for recording all the materials use in connection with an individual repair job, used in the service department of the Mitchell Motor Company, New York City

a yellow duplicate blank. These forms are not numbered, and as they are filled out the original is sent to the stock room to be filled, while the carbon copy immediately goes to the office of the service department superintendent. On top of this form the date, the name of the workman ordering the material, and the number of the repair job on which it is to be used are entered. The bulk of the form is devoted to the description of the part or parts to be delivered to the workman, the model of the car for which they are required, the catalog number of the part to be drawn from stock and the quantity of the material. Before this requisition is sent to the stock room it is signed by the foreman, and after being filled by the stock room clerk and the person receiving the material, whether this is the workman himself or a boy. The latter course, that is, the use of a boy for calling on the stock room to obtain the repairs for the workmen, is an economic one applied by this company as well as several other progressives.

Cost and Charge Price Are Noted

The Mitchell Company uses another blank, Form 7, designed to be a record of all the materials used in connection with the repair work done on an individual repair job. Form 7 is 8½ by 11 inches and ruled with two groups of five columns each, which are filled with the name and quantity of the material required, a notation of whether it is to be charged to the car owner or to be carried by the company, a column for the cost and one for the sales price. This form is made out in duplicate, and while the original remains in the office of the superintendent, who fills out this blank, a carbon duplicate thereof is sent to the foreman of the shop. As the workmen doing the repair on the car use material which they receive from the stock room, they save the carbon copies of these requisitions, and, when the repair is finished, deliver them to the foreman. The latter enters all the material used in connection with the repair on the reverse side of the work order, that is, on Form 7, which is then returned to the superintendent with the complete repair job.

Another type of requisition blank, Form 9, is used by the American Marion Sales Company, 1896 Broadway, New York City. This form is made out with a duplicate on plain yellow paper which, however, is stamped with the same number as the original, Form 9. This is 5 by 8 inches and printed on white paper. It comes in book form and the blanks are numbered consecutively. Spaces provided on this blank afford an opportunity of recording the nature and quantity of the material used, the price per unit of same, the total value of the material, the date on which requisition is filled out, the name of the workman making it out and the number of the job for which the material is required. In the lower left hand corner of the blank the condition on which the part is used, that is, charge or gratis, is entered, and another space is reserved for the signature of the person receiving the goods specified on the requisition. The signature of the stock room clerk delivering the material is entered in the lower right hand corner of the blank, and after the material is disbursed and the stock records have been rectified by the clerk, he also signs the space marked Entered, near the upper right hand corner of the blank. There is also a narrow column near the right edge of the blank in which the price named on this form is checked by the superintendent or his assistant, if it is correct.

A form used by the Peerless company for the recording of all the material used in connection with a certain repair job is the blank shown as Form 11. This form is made out in duplicate and one copy is sent to the repair shop with the car, while a duplicate remains in the office of the superintendent, who makes out repair order with which the car is brought in.

OAKLAND MOTOR COMPANY
REQUISITION FOR MATERIAL
No. 1050

Storekeeper:-
Deliver material as ordered and charge to Job No. _____ Date _____ 191__

Quantity	Part No.	Description				

Signed _____ Foreman

Fig. 8—Oakland Motor Company's requisition, a specimen of up-to-date design in material recording blanks

Forms Used with Parts Returned

This form is 10¾ by 17 inches, printed on yellow paper with red lines and black lettering. As reference to the illustration shows, its design is very elaborate and comprises columns for the recording of the following materials, as they are being used from day to day on the repair work: Regular parts of the automobile, gasoline and oil, waste and other materials which are used on every job, and, finally, whatever special material has to be bought from outside. The date on which these materials are used, the job ticket, giving the repair number of the car, and the total cost of the material and the price which is charged for the same, are all entered in one line. The left half of Form 11 is entirely devoted to this sort of records and affords space for entries on 35 working days. The right half of the form is designed with classification of the various materials used on the car, that is, for the repairs of which parts were drawn from stock. Below this portion, a space is reserved for a record of the time expended in the various departments during the repair of the car, the cost of this labor and the charges made for it. A similar short digest of all the materials used is given below the total labor record and these data serve as a basis for the bill which is sent to the customer.

Some companies make special provision for the case of repair parts or other material being out of stock by using a purchase requisition such as Form 1. This requisition is filled out by the stock room clerk when he finds that his supply of a certain part required by the shop has run low. One of the best forms in use for this condition is Form 1. It is 5 by 8 inches, of thin white paper with black print, and is filled out with a

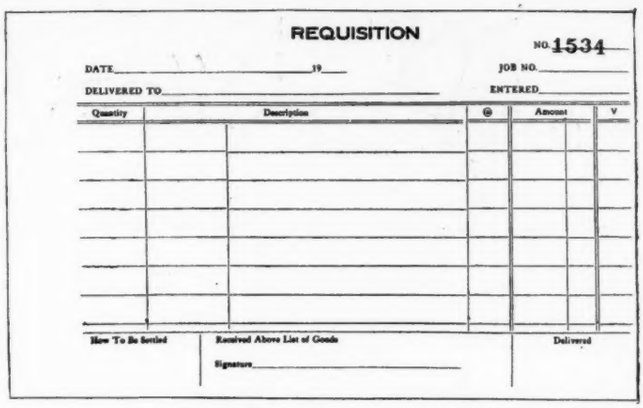
duplicate or carbon copy on plain yellow paper. Since the use of a purchase requisition is rather unfrequent, these requisitions are not numbered, but come in pad form and are punched for insertion in a binder, after being filled. On the top of the purchase requisition appears the date on which it is made out and below the same specifications of the material to be purchased for the purpose of replenishing the stock of the service department. These specifications include a description of the part or material to be bought, a statement of the quantity on hand and that required by the shop; of the quantity to be purchased for the purpose of replenishing the stock of the service or parts may be obtained. The requisition, signed in the lower left hand corner by the stock room clerk, is looked over and approved by the department superintendent and is then handed to a member of the company's office, who makes out a purchase order and signs the purchase requisition, at the same time entering the number of the purchase order on the requisition.

After the material specified on this form has been received by the company, the stock room clerk checks it off on his carbon copy, which is then sent to the company's office and filed away with the original purchase requisition to indicate the matter has been settled.

Purchase Requisitions and Orders

The order used by the American-Marion Sales Company in purchasing parts, etc., is shown in Form 2. This form is exactly the same size as the purchase requisition and is punched in the same way, permitting of filing both types of form in one binder. The original of the order is white and the duplicate blank is light red, and both are printed in dark blue. The order provides space for the date on which it is filled out, the name and address of the company which supplies the material or parts to be bought, and the terms of sale.

Ten lines are devoted to the description of the material to be furnished by the dealer to the company's service department. Every set of original and duplicate orders bears consecutive



REQUISITION

NO. 1534

DATE _____ 19____ JOB NO. _____

DELIVERED TO _____ ENTERED _____

Quantity	Description	@	Amount	V

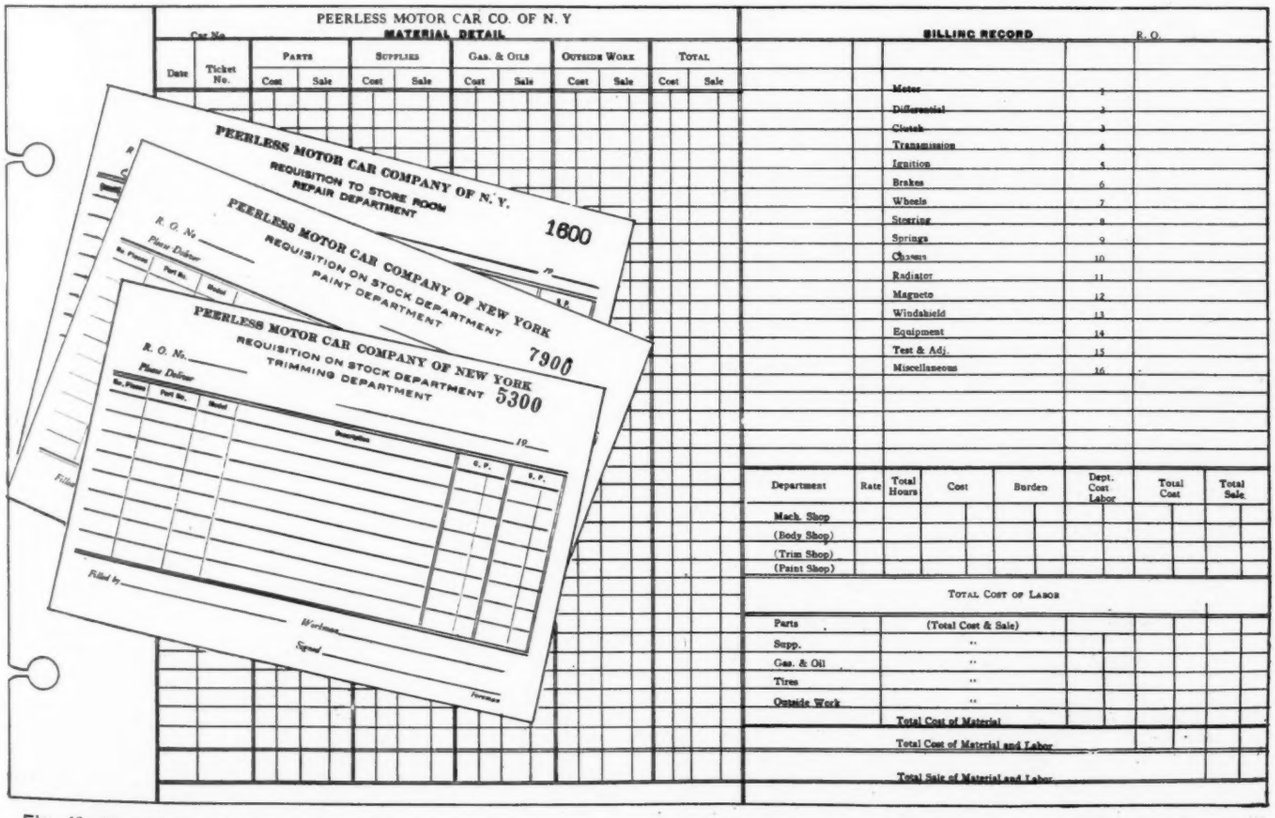
How To Be Settled | Received Above List of Goods | Delivered

Signature _____

Fig. 9—American-Marion Sales Company's requisition, designed to give information of every essential detail

numbers on the bottom of the blank. The name of the clerk who signs the order is written in the lower right hand corner of the blank.

There is another case in which material is added to the stock of the company, although only temporarily. This refers to the return of inferior and damaged parts replaced by the service department under the guarantee, and which are afterwards returned to the factory for credit. Such temporary additions to the stock are accompanied by a Parts Returned Memorandum, Form 3. This blank is used by the service department of the Mitchell Company, and is made out in duplicate, one copy remaining in the office of the superintendent, while the other goes with the parts to the stock room, being returned to the superintendent after the damaged parts have been shipped to the factory. The nature and quantity of the material, date of receipt and name of car owner who returned the part, as well as other details are entered on this blank.



PEERLESS MOTOR CAR CO. OF N. Y.

MATERIAL DETAIL

Car No.

Date	Ticket No.	Parts Cost	Parts Sale	Supplies Cost	Supplies Sale	Gas. & Oils Cost	Gas. & Oils Sale	Outside Work Cost	Outside Work Sale	Total Cost	Total Sale

PEERLESS MOTOR CAR COMPANY OF N. Y.
REQUISITION TO STORE ROOM
REPAIR DEPARTMENT
1600

PEERLESS MOTOR CAR COMPANY OF NEW YORK
REQUISITION ON STOCK DEPARTMENT
PAINT DEPARTMENT
7900

PEERLESS MOTOR CAR COMPANY OF NEW YORK
REQUISITION ON STOCK DEPARTMENT
TRIMMING DEPARTMENT
5300

R. O. No. _____ Please Deliver

No. Pieces	Part No.	Model	Description	G. P.	S. P.

Filled by _____ Workman _____ Signed _____ Foreman

BILLING RECORD R. O.

Motor	1
Differential	2
Clutch	3
Transmission	4
Ignition	5
Brakes	6
Wheels	7
Steering	8
Springs	9
Chassis	10
Radiator	11
Magneto	12
Windshield	13
Equipment	14
Test & Adj.	15
Miscellaneous	16

Department	Rate	Total Hours	Cost	Burden	Dept. Cost Labor	Total Cost	Total Sale
Mach. Shop							
(Body Shop)							
(Trim Shop)							
(Paint Shop)							

TOTAL COST OF LABOR

Parts	(Total Cost & Sale)					
Supp.	"					
Gas. & Oil	"					
Tires	"					
Outside Work	"					

Total Cost of Material

Total Cost of Material and Labor

Total Sale of Material and Labor

Fig. 10—Requisition blanks used by the various repaid shops of the Peerless Motor Car Company's service department. Fig. 11—Principal record sheet on which all material used on a job is noted in detail and totaled

Carbureter Performance; Differential Lock Explained; Slipping Clutch Cured; Some Questions on Motor Clearance; Points Against Metric System; Welding Job Spoiled Cylinder; Tip on Gear Changing

Points on Holley Carbureter

EDITOR THE AUTOMOBILE:—I am using a Holley carbureter and would like to know a little more about it than I do now. Kindly tell me what economy I should expect with this carbureter and let me know if there have been any *bona-fide* tests made which can be shown by curves or in tabular form. I am using the model H. What is the best method of adjusting this carbureter for use on a touring car?

Williamsbridge, New York City. R. T. CORRY.

—A section through the Holley model H carbureter is shown in Fig. 6. This carbureter as may be seen by the illustration is of the concentric float type which means that the center of the ring float is in the same perpendicular line as the center of the spray nozzle. There is but one adjustment point on the carbureter: this is the knurled needle valve screw which is shown in the sectional view of the carbureter. Start the motor and allow it to run as slowly as it will without stopping. Turn the needle valve to the left until it runs steadily and then see if the motor can be throttled still lower. When the motor idles properly, that is will run at a reasonably slow rate without missing, speed up the motor and turn the needle valve, if necessary, to the right to find if better running will result. When the best success is obtained at high speed try the low speed again to see if the motor still idles as it should. In this manner the adjustments are worked back between high and low speed until the proper mixture is obtained at both. It must be remembered that it is desirable for the sake of economy to make the mixture as lean as possible and still get good results. The mixture is made leaner by turning the needle valve to the right.

Tests have been made on this carbureter by the Holley people and they have given out a set of curves which have been published in the literature of the company and which are reproduced here. Fig. 2 shows a horsepower curve secured with a 4 by 4.5 inch motor when using the Holley carbureter. The feature of this curve is the steady rise up to 1,600 revolutions per minute. Below the horsepower curve in the same illustration is a curve showing the revolutions per minute and pounds of fuel per brake horsepower-hour of a four-cylinder 3.75 by 4-inch motor. The curves shown in Fig. 1 are taken from three separate cars and show the difference in economy at ordinary driving speeds with motors of different size and design. The upper curve is a 3.75 by 4-inch motor of four cylinders, the second a four-cylinder 4 by 4.5-inch motor and the third a 4 by 4.75-inch six-cylinder motor.

Where to Secure State Laws

Editor THE AUTOMOBILE:—Could you tell me where I could get information on the automobile laws of California? What are the requirements to get a chauffeur's license in that state? I am 17 years old.

Cottonwood, Cal. L. SAFLEY.

—Address the Secretary of State at Sacramento, Cal. The requirements to become a chauffeur, as well as full information regarding the state laws, will be furnished for the asking.

Motor Overheats After Welding

Editor THE AUTOMOBILE:—We have a 1910 Garford Studebaker four-cylinder touring car. Recently we had the cylinders welded where they had cracked on account of the water in the jackets freezing last winter. The first time it was welded, the cylinders leaked. The second time proved to be entirely satisfactory. Now, the water overheats. The radiator has been overhauled by competent repairmen and the pump works satisfactorily. The timing of the ignition is also satisfactory. We use a light cylinder oil.

My question is: Would the welding of the cylinders cause the overheating in this particular case, and if not, what would be the possible reason for this trouble?

Pittsburgh, Pa. H. A. M.

—There may be one or more causes for the overheating of the water after the welding job was completed. In the first place there is a possibility that the cylinder still has a crack which is so slight that it does not open up until submitted to the heat of combustion. When this occurs there is a marked tendency for the water to overheat. Another possible cause is that in the reboring the cylinder was cut too close to the water-jacket, leaving the metal thin at that point. The most probable cause, however, and the one to which you may ascribe your trouble is that the jacket is clogged by some metal which has become lodged in the jacket space. This prevents the free circulation of the water, and besides becoming very hot itself, permits the water to become overheated also.

If any of these explanations is the one that fits your case there will be nothing left for you to do but to buy another cylinder casting, which will cost you $62.70.

Questions as to Motor Design

Editor THE AUTOMOBILE:—Kindly answer the following:

1—What compression should a cylinder register with a bore of 5 inches and a stroke of 5 1-2 inches?

2—How much space should there be between the top of the piston and cylinder when the piston is at the highest point?

3—If the valves are 1 13-16 inch in diameter, and open 3-8 of an inch, where should the piston be when the inlet valve begins to open?

4—Where should the piston be when the exhaust opens, in inches, to get the best results?

5—If valve opens 3-8 of an inch, how much space should there be between the valve cap and valve, in inlet and exhaust valves?

6—Is it practical to replace present valve caps with longer or deeper ones, to get more compression?

7—How much space do the Packard 30 and the Simplex 50 have between the top of the piston and cylinder at highest point, and also how much pressure in pounds?

Rye, N. Y. CHESTER E. LOUNSBURY.

—1—For ordinary touring work a pressure of 65 pounds at the top of the compression stroke is very good. For racing this pressure may run up as high as 120 pounds. The first mentioned, however, is very good for all around work.

2—This depends altogether on the cylinder design and how the compression space is arranged. That is, if the motor were T-head it would have less clearance than if the motor had its valves in the head because there would not be so much volume taken up in the valve recesses in the latter model. A clearance of at least 1 inch is left in all designs.

3—The crank should be about 10 degrees on its circle past dead center. This would correspond very closely to 1 3-4 inches measured around the circumference of the flywheel.

4—The exhaust valve would open 40 degrees on the crank circle before lower dead center. This would be about 7 inches circumferentially on the flywheel. The position of the piston at this time is best figured graphically by laying out the crank circle to scale and then drawing in the desired angle of 40 degrees and projecting from the point at which the angle cuts the circumference of the crank circle over to the vertical diameter of the circle or cylinder axis produced. The distance between the point at which this projection cuts the vertical diameter of the crank circle and the intersection of the crank circle and the vertical diameter gives the distance in inches that the piston has to travel before reaching lower dead center.

5—This height is determined by the port area required to get the gases into the cylinder at the proper velocity. A longitudinal vertical section taken through the center of the valve will also pass through the center of the cap and show the area of the port. This must be at least as great as the area of the valve or the gases will be choked on entering the cylinders. It would seem that at least 1 inch clearance should be left here on a rough estimate in order that there will be no choking effect, and a greater clearance than this would be desirable. This clearance is measured above the extreme lift of the valve.

6—The gain in compression secured in this manner would be so slight that it would be innappreciable. It would not be advisable to let the lower part of the valve cap extend into the combustion space as it would not be properly cooled and the chances are that carbon trouble and preignition might develop.

7—The Packard 30 has about 1-inch clearance and a compression pressure of 60 pounds. The Simplex 50 has a clearance of about 1 1-4 inches and a compression pressure of 70 pounds.

Center Steer as a Solution

Editor THE AUTOMOBILE:—The right or left control controversy, now being discussed in your paper has, I am sure, been of interest to thousands of motorists, but like many other motor-car problems, will, in the writer's opinion, never be definitely settled.

The arguments, pro and con, have much to commend both systems and the question would finally resolve itself into a matter of personal choice. The motor cars of the future will, I think, be so designed as to admit of having the steering column on either side, thus giving the purchaser his choice. Another, but less logical, way out of the difficulty, would be to mount the steering column in the center, with room for a passenger on each side. Probably though, this will never be done, at least on pleasure cars, because there would be no room for the steering gear and connections.

East Canaan, Conn. D. C. CANFIELD.

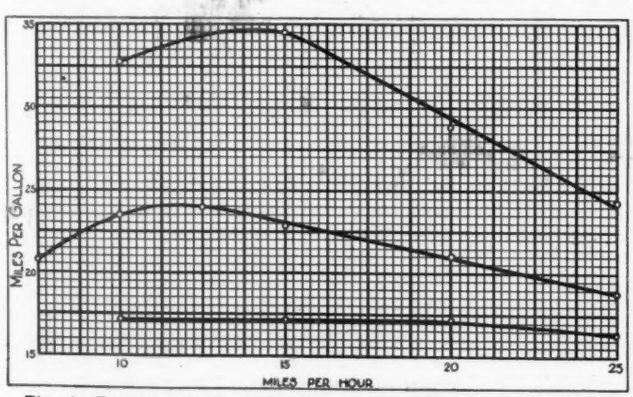


Fig. 1—Economy tests with Holly carbureter. From top to bottom, the first curve was taken on a four-cylinder motor with 3.75-inch bore and 4-inch stroke; the second on a four-cylinder 4 by 4.5-inch motor and the bottom curve from a six-cylinder 4 by 4.75-inch motor

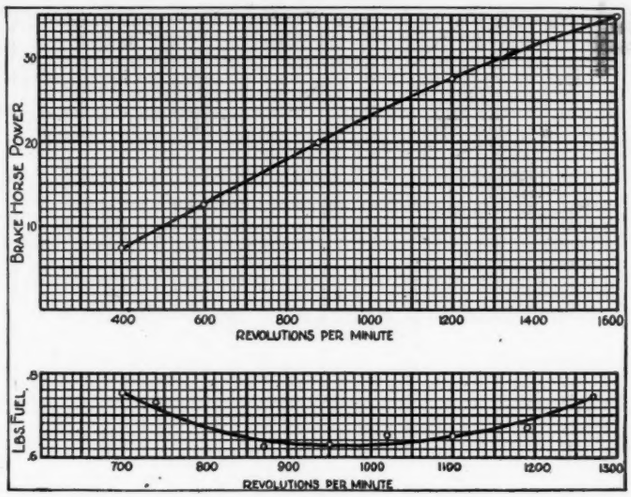


Fig. 2—Brake horsepower curve of a four-cylinder 4 by 4.5-inch motor with Holley carbureter and the fuel consumption per brake horsepower curve of a 3.75 by 4-inch motor with a carbureter of the same make

Wants Tank Under Dash Cowl

Editor THE AUTOMOBILE:—My car carries the gasoline tank under the front seat and consequently the carbureter has had to be located as low as possible to get gravity feed, which, of course, has necessitated a long manifold. As I have difficulty in starting the engine, especially when cold, I am taking the liberty of asking you what effect it would have to place the gasoline tank under the cowl (which in my case is perfectly feasible) and then raise the carbureter so that the manifold would be shortened about 10 inches.

Would such a change be likely to create any unfavorable working conditions?

Lima, O. C. I. LUFKIN.

—There would be nothing unfavorable in making the suggested arrangement, provided that you arranged your piping so that you would be in no danger of having trouble with air locks. Keep the piping straight and, above all, do not have any vertical bends, because it is the latter that cause air locks to the greatest extent. The greatest practical difficulty would be in the shortening of the manifold. This can be done by a competent mechanic, however, who would not interfere with the proper flow of gases from the carbureter to the cylinder by changing the general design of the manifold.

Duryea Dislikes Metric System

Editor THE AUTOMOBILE:—Regarding the article on the metric system in THE AUTOMOBILE for August 22 and 29, I wish to state:

The metric system was devised by a political favorite and theorist and not by a practical man. The meter was assumed to be a certain part of the world's circumference, which has never been measured absolutely, and changes as the years go by, most likely; and which measurement is now known to be incorrect. The author would have shown much better sense had he chosen as his meter the standard British yard. He thought, as do many others, that there is merit in the number ten, whereas, as a matter of fact, it is unfortunate that ten was made the base of our system of notation. Twelve, which we daily use when we say a dozen, or sixteen, or twenty-four, corresponding to the letters of the alphabet, would have made a much

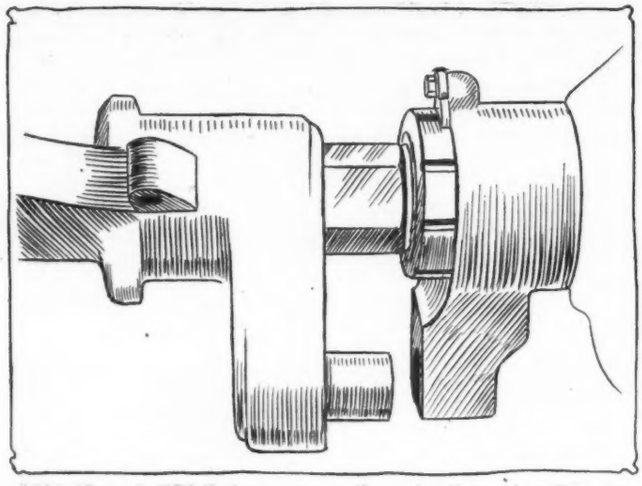


Fig. 3—Differential lock as employed on the Alco truck

better numerical base. See The New Art of Arithmetic in Nystrom's Mechanics.

But, without quarreling with the base, the system is fine for theorists, but less fine for practical people. Most people count by two and divide by two. Quite a number count three at a time, but few can count five at a time. The duodecimal system permits counting by twos, threes, fours, or sixes, and fits many jobs better than a decimal system. So long as things remain rectangular it will be easier to put twelve in a box than ten, and it is foolish to fight physical facts like this.

Further, the French themselves do not make use of the metric system, as one would expect. Where we say a tire is 30 by 3 inches, they say it is 750 by 75 millimeters, which is a mellifluous mouthful, but not so easy of comprehension by average brains nor so handy as our present method. If any one needs a decimal system we can just as well say thirty-thousand-thousandths inches to indicate the diameter of the wheel decimally, and with as good sense as the common metric reading.

The main objection, however, is that the system interferes with prevailing systems which cannot be discarded. If I wish to build an addition to my house I must cut things in feet and inches and must fit gas pipes which are threaded with inch threads. To introduce an additional system alongside of these old ones means a needless confusion. It means a loss of time and money. It offers no commensurate gain. It is much better for us to standardize a few of the present measurements and use them, rather than introduce still another. We have now, for example, three general varieties of screw threads, the V, the United States standard, and the Automobile, each with a large number of sizes, so that no one knows whether a 1-2-inch bolt has a 12, 13, 14 or 20 thread; and other sizes are equally uncertain. If we add to these the metric, we simply go from bad to worse. In the textile trades three lengths, or ells, are used, varying by some inches, and formerly based on the length of the workman's elbow.

If your readers wish to know more of the objections to the metric system I suggest that they read The Metric Fallacy, by Frederick A. Halsey, and The Metric Failure, by Samuel S. Dale, published by the D. Van Nostrand Company, New York City.

Saginaw, Mich. CHARLES E. DURYEA.

Changing Gears Without Noise

Editor THE AUTOMOBILE:—In a recent number of THE AUTOMOBILE a subscriber asks how to shift gears from high to second without grating them. I wore out two gears myself before getting on to the knack of doing it properly. Here is, I think, the only correct way to do it: First, throw out the clutch, then bring the gears to neutral and let in the clutch at the same time. Press the accelerator slightly, speeding up the engine a little, then throw out the clutch and put the gears in second speed. You may need a little practice to do it neatly but when you get the knack of it you will not make a click.

Burlington, Vt. ELMER E. GOVE.

Engine Knocks in Ascending Hill

Editor THE AUTOMOBILE:—Every time I ascend a hill there is a distinct knock in my motor. When running along level ground I never have this trouble and when I shift back into lower gear the trouble also disappears. One hill I could readily take on high if it were not for this.

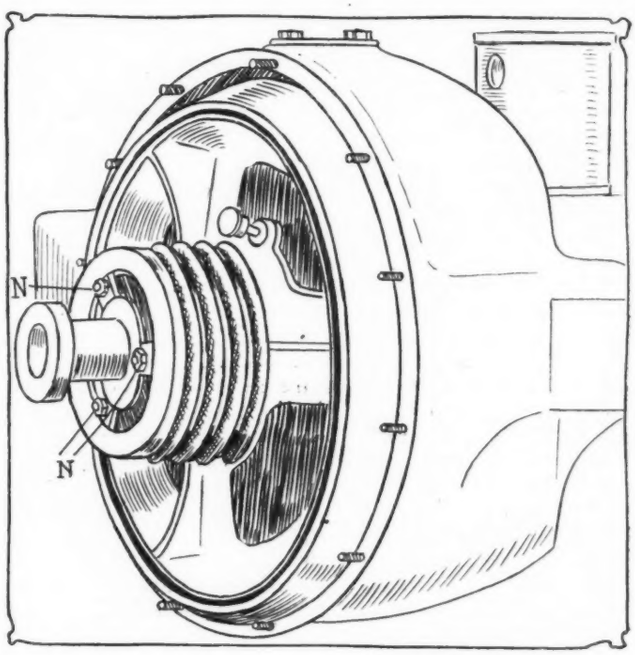


Fig. 4—Adjustment nuts, N, on Cole leather-faced cone clutch

Chappaqua, N. Y. S. B. STEVENS.

—The trouble is that the spark is not retarded far enough in ascending the hill. When the motor is turning over slowly the spark occurs sooner than it should and causes the knock. Turn the timer back further on its axis in order that the spark can be made to occur earlier.

Five-Cylinder Motor Discussed

Editor THE AUTOMOBILE:—I am interested to know the whys and wherefores in regard to a five-cylinder, four-cycle motor, the cranks set at 72 degrees to fire in rotation.

I think there must be some reason why such a motor has not been brought out, as far as I have been able to learn but a very few of this design have been produced. The Adams-Farwell company makes a rotary of five cylinders and a reciprocating motor with five cylinders has been made, so I have been told, that gave the best of satisfaction, reducing vibration to the minimum. There would be a uniform torque as the power stroke of one cylinder would not be completed before the next took hold. If there are disadvantages please lay them bare, as I wish to get at the real facts in the case.

Waterbury, Conn. H. D. B.

—There is not much data at hand on the five-cylinder motor, although one was made some time ago and was said to be very successful. The opinion of the designer of that motor, Mr. H. Dock, is as follows:

"I believe the only reason why this type of engine is not built is because its merits have not been investigated, for, in my judgment, which the performance of a motor of this type will bear

out, there is nothing in the line that will equal them unless it be a seven cylinder.

"In one or two instances wherein I tried to interest automobile manufacturers in this engine I was met with the argument 'that the public were satisfied with the four or six, therefore, why the use of improving?'

"In a five-cylinder engine there is nothing to invent, but I did, I believe, build the first one of its class in Philadelphia in 1901. Since then in connection with the concern which had the contract I built the government field searchlight engine and others and wherever they have been put in commission they give satisfaction.

"For automobile use they are much superior to the four or six as the shaft is in constant torque, one cylinder being always in pressure, and the machines in which I have ridden with the five cylinders are the best hill-climbers of any.

"As to balancing, this class of engine was a surprise, for while I was building the first one many interested engineers saw it and the general opinion of all was that it would be so out of balance as to be worthless.

"But, as a matter of fact, it is the quietest, smoothest engine

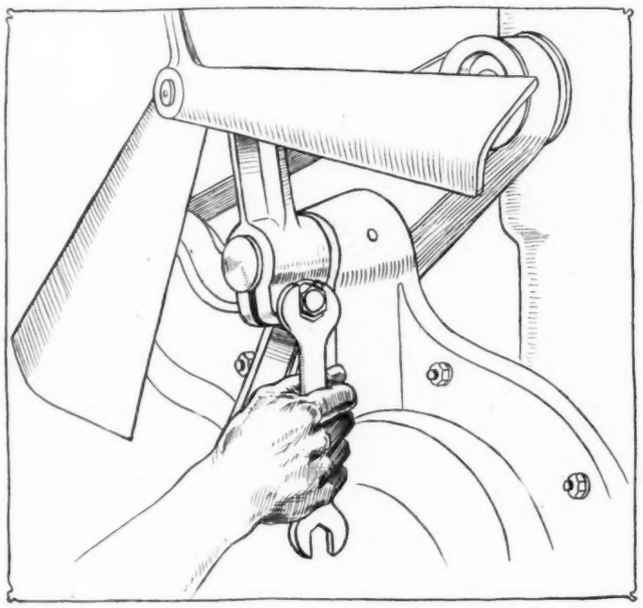


Fig. 5—Nut loosened to adjust tension on Cole fan belt

I have found and more flexible by far than its four- or six-cylinder brother.

"Finally it is my belief that whenever some enterprising manufacturers of automobiles takes up the five cylinder he will have a walkover and command the field, given that his production is always first class."

This is an interesting topic and one which could be further discussed to advantage. There is a lack of data as regards actual performances on the road and Mr. Dock does not state what cars were ever manufactured that used his motor. THE AUTOMOBILE has no record of any such.

Uses of a Differential Lock

Editor THE AUTOMOBILE:—In reading the story on the army maneuvers up in Connecticut recently I noticed the remark that some device was necessary to lock the differential of a truck so that the traction would be exerted on both wheels instead of the wheel that happend to be lodged in some slippery hole. Of what does such a device consist and what does it look like?

New Rochelle, N. Y. LIEUTENANT.

—The accompanying illustration, Fig. 3, shows the form of this device as used on the Alco trucks. The large dog slides along the hexagonal shaft shown in the illustration until the projection on the end slides into the hole opposite it. The two parts then turn as one. This locking device is placed in the rear system at a point where its engagement will cause the two driving axles to rotate as one. It is useful at any point where the action is apt to fall more heavily on one wheel than on another.

Cure of Slipping Cone Clutch

Editor THE AUTOMOBILE:—The clutch on my Cole car slips. I have been driving the car for some time in this condition but I am afraid that if I continue to do so the leather will become glazed. How do you go about preventing the slip?

(2) Will you also kindly tell me what to do to prevent the belt on my fan from slipping when I am traveling at slow speed?

White Plains, N. Y. SUBSCRIBER.

—There are three nuts on the clutch which you will be readily able to locate after a study of Fig. 4. The nuts are labeled N in the illustration and should be turned to the right four or five turns to increase the tension on the clutch spring to the desired point. This will end the trouble with the clutch unless it be that the leather is soaked with oil, a situation, however, which is not probable in the Cole car. If you find oil on the surface of the leather, block the clutch out of engagement by placing a prop against the pedal and against the seats or some other point in the car and wash off the leather with gasoline. When this is dry apply a thin coating of neat's foot oil.

(2) To adjust the fan bracket so that the belt will not slip at low speeds, it is necessary to loosen the nut shown in Fig. 5. Swing the bracket up so as to increase the tension on the belt and then tighten the nut again.

Credit to Reference Work

THE AUTOMOBILE takes great pleasure in acknowledging its indebtedness to "Our Weights and Measures," by H. J. Chaney, for the assistance rendered in compiling the recent series of articles on the English and metric systems of measurements.

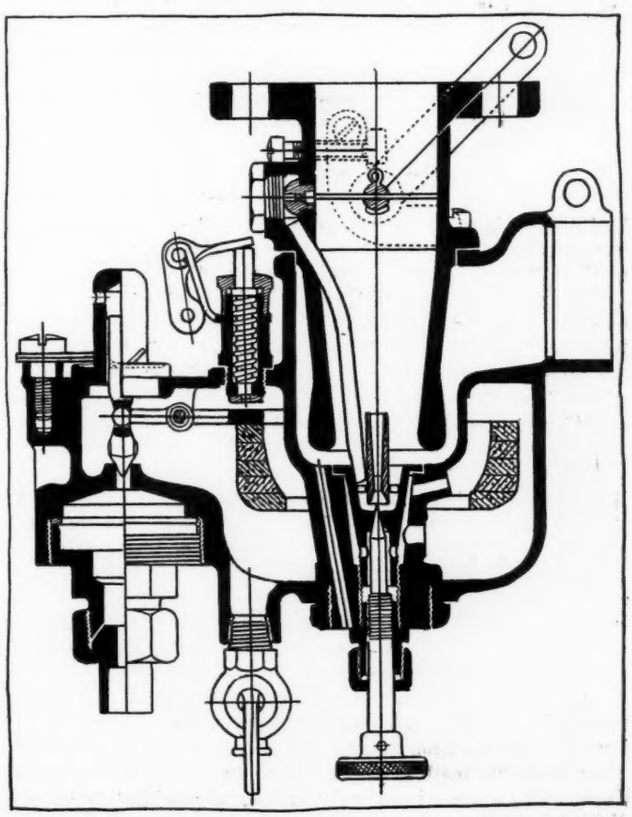
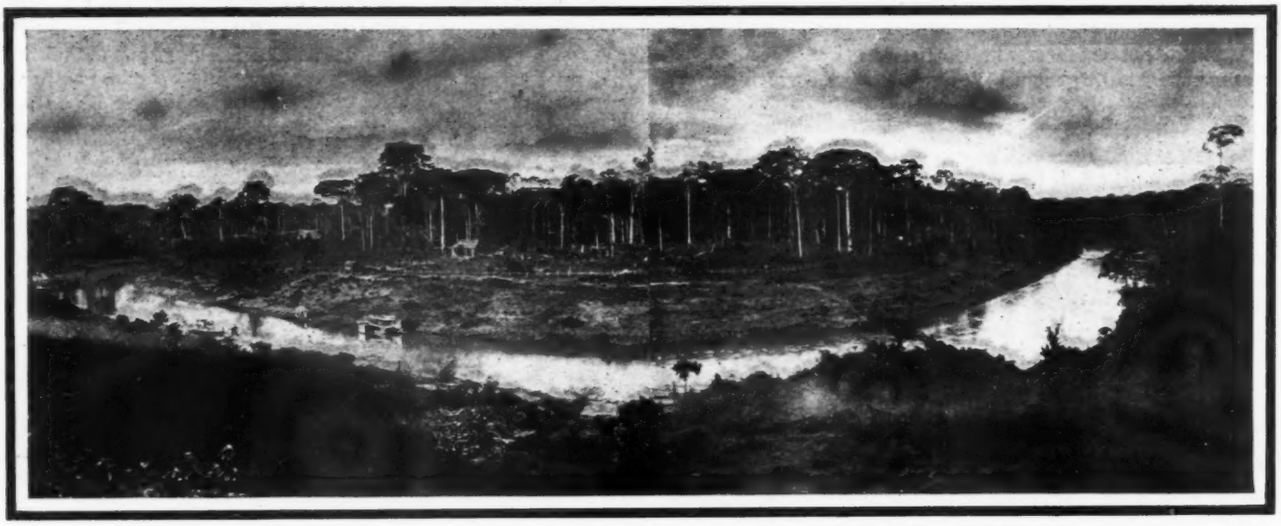


Fig. 6—Section of Holley carbureter showing single adjustment point



The Acre Valley viewed from Cobija on the frontier of Bolivia in the heart of the rubber country

Brazil Plans Big Increase In Rubber Yield

New Law Provides Remissions of Duties to Encourage Industry, Bonuses for Planting and Subventions for Factories Estimated at $15,000,000 a Year in Effort to Bring Annual Crop to 60,000 Long Tons

INDIGENOUS rubber produced in the great Amazon Valley will reach a total of approximately 40,000 long tons during 1912, according to the opinion of experts, delegates and officials assigned by the Brazilian government to be present at the forthcoming international rubber exposition which opens at the Grand Central Palace Monday, September 23.

Already several of the Brazilian leaders have arrived in New York City and are busy with the installation of the exhibits and they are enthusiastic with regard to the prospects for the years to come.

The reason for their enthusiasm is that the federal government of Brazil has passed a series of laws this year aimed to increase the production of rubber along scientific lines. They can foresee a time in the near future when the total production will be from 25 to 40 per cent. higher than it is at present and a valuable improvement in quality of the gum raised.

Statute Is Wide in Its Terms

The new law, decree 2,543A, was approved January 5 and the regulations to put it into effect April 17. The law exempts all utensils and material intended to be used in the culture of seringueira, castilloa or caucho, manicoba and mangabeira from customs and petty administrative charges. Secondly, it provides for bonuses for planting or replanting fields and orchards of the trees mentioned. For planting 12 hectares the planter may claim 2,500 milreis, or about $800. A hectare is, roughly speaking, 2 1-2 acres. The bonus of $800 is for planting seringueira, but the other varieties also entitle him to lesser sums. These bonuses are due 1 year before the first harvest. The size of the bonus may be increased 5 per cent. if the planter shows that he has raised food plants on the cultivated portion of his plantation.

The government will have sixteen experimental stations.

For the establishment of the first refinery for the seringa, which shall reduce the various qualities to one uniform grade for exportation, the government offers as much as $128,000 in the form of a bonus. In order to be eligible the factory must invest at least four times the value of the bonus.

Immigrant inns, hospitals, and small agricultural colonies are specified and promised by the government and various narrow-gauge railroads to tap the rubber country, improved waterways and betterments in transportation otherwise are encouraged by relaxation of customs duties on materials and by subventions.

Bonuses for Food Production

In order to encourage planters to produce food stuffs, bonuses are offered in the way of payments and remission of duties on materials. These subventions cover not only grain, vegetables and pasturage, but also meat and lacteal products, fish and other food elements for man and beast.

Once in 3 years the government will promote an exhibition at Rio de Janeiro embracing the rubber industry at which large prizes will be offered for improvements in cultivation and production methods.

Reduction of the export duties levied by the states of Amazonas, Parana and Matto Grosso by agreement between the federal government and those of the states is authorized and complete exemption of seringa rubber for 25 years is outlined. This provision depends upon affirmation of the three states mentioned.

Estimating the results of this new law in a financial sense as it affects the government, involves two financial factors. First, the loss of revenue due to the relaxation of customs duties, and, second, the payment of the direct bonuses authorized. Both factors will depend upon the extent of the increase in production and preparation for such production. The government of Brazil has authorized the opening of a bureau of credits to have jurisdiction over the project and under the law an annual accounting must be made to the legislative branch of the government.

The regulations of April 17 cover the provisions of the foregoing law under eight headings as outlined in the original decree.

Under the heading covering bonuses for new cultivation, it is provided that 250 trees per hectare of seringueira or castilloa, or about 100 trees to the acre, is the minimum for which bonuses will be paid. With regard to manicoba and mangabeira 400 trees per hectare are specified.

A special bonus of $150,000 in specie is offered for factories wherein the native rubber may be turned into articles of commerce such as at present form a material item of importation.

The immigrant inns are to be established at Belem, Manaos and in the Acre and will be large enough to accommodate 3,500 persons and will be operated under governmental auspices.

In a word, the law contemplates increasing the production of Brazilian rubber and is by far the greatest bit of paternalistic legislation that ever found its way into the statute books of a nation.

In case any considerable amount of territory is brought under cultivation by reason of the law, and if the manufacturers and shippers and producers are stimulated to build the factories, railroads and other elements of the problem, it is conceivable that the remissions, subventions and bonuses may reach $15,000,000 a year.

In case such a result is accomplished, it is estimated that the production of crude rubber in Brazil alone will approximate 60,000 long tons, while the agricultural wealth will increase by at least $50,000,000 annually, entirely aside from rubber.

The Amazon valley covers all the land drained by the Amazon River and its tributaries. This includes practically all the rubber country of Brazil and Bolivia and much of Peru and the states lying along the northeast coast of South America. But it does not include territory outside the watershed of the Amazon.

The chief branches of the Amazon are the Tocantins, Xingu, Madeira, Negro, and there are probably twenty lesser streams which drain territories little known at present. Most of the country is a primeval jungle, only the most superficial effort at trade exploitation having been made to bring it into commercial bearing.

Contractors Profit Largely

For one reason, the supply of rubber from the jungles that are in communication with the world has proved sufficient to take all the attention of those engaged in the work so far. Difficulties of transportation are the main causes for the lack of rapid extension of the explored field.

The most widely known grade of rubber produced in the Amazon valley is designated as up-river fine Para. This grade comes to commercial attention in the shape of elongated balls weighing from 60 to 120 pounds and even more or less than those figures, depending upon the conditions under which it was smoked. The work is done by the men who gather the latex from the forests where the Hevea Brasiliensis grows.

These men are recruited from among the Indian natives, cross-breeds and variously mixed classes, only a small percentage of the seringueiros, or rubber gatherers, being of pure or approximately pure white blood.

They are installed in semi-permanent camps and each is assigned to a certain route covering about 100 trees, which may be scattered for a mile or more. Generally each man has at least two routes to cover on alternate days or less frequently.

The regular process is to start at dawn, armed with a small tapping axe such as is shown in the initial illustration herewith, and several hundred small tin cups. The seringueiro covers in succession each of the trees in his route for the day, hacking them in promising spots and attaching a cup below each of the wounds inflicted on the bark of the tree.

By mid-forenoon he can finish such work on the average route and then follows the collection of the latex. The gatherer goes first to the tree he tapped earliest and thence proceeds throughout the route. The latex is collected in tin vessels, as a rule, such as 5-gallon oil cans.

How the Rubber is Collected

Having collected the rubber milk he returns to camp and proceeds to smoke his store of juice by building a fire and burning in it the nuts of the urucuri palm, which produces a rich, oily smoke. In this smoke the seringueiro holds a wooden paddle which has been dipped in the latex. As each layer dries, more latex is added until a great ball is produced. Having smoked his rubber, the seringueiro has nothing to do until tomorrow.

The next day he works his alternate route and continues thus until Saturday.

While much of the labor is handled according to the plan outlined above, there is another plan that was formerly very popular and which still obtains to a large extent. This is the contract system by which the producer credits the seringueiro with about half the market price of the rubber he brings into the producer's warehouse and will take all he can collect, providing the seringueiro agrees to buy his supplies at the company store. The contractor does not aim to make much actual profit on the rubber, but it has been shown that the bulk of his profits come from the sale of supplies to the workman.

Under this plan, the seringueiro reports at the company warehouse on Saturday with his week's production. He may have as much as 300 pounds of first grade rubber, but the gen-

Settlement near Monte Mo., showing house used by rubber workers

Hut of a seringueiro where smoking and collecting keep him busy

Specimen of hevea over 16 feet in circumference

eral run is much less than that amount. Ordinarily a man can collect from 10 pounds to 60 pounds of latex in a day and the average yield of rubber is only from one-third to one-half of the volume of the latex. On an average probably 25 pounds would be conservative. This would make the average weekly production per man range from 50 to 75 pounds.

After being credited with, say, $30, or its equivalent, he buys his supplies for the next week at good round figures and goes back to his work.

The season is from May to December, during the low stage of the Amazon and its tributaries. During the other months tapping is discontinued.

The methods used in the collection of rubber are commensurate with the class of labor employed. The supply of hevea trees is much greater than has been supposed and the utmost lavishness has been used in tapping those under production. As a general thing, the method used in tapping is simply for the seringueiro to whack his hatchet into the tree wherever there appears to be a promising bit of bark. Some of them wipe off the surface to remove moss and lichens before tapping, but the rule is to tap hard and often and wherever convenient.

In some of the estates an entirely different method is in vogue. There, the workmen use the most advanced procedure and the tapping is done by fishbone, excission and incision methods, using tools of the highest efficiency. The difference in yield is materially in favor of the latter system. This is counterbalanced to some extent by the time saved owing to the less detailed care required under the former method of collection.

But whatever the method used in producing and collection, the next step is to market the product. The crude rubber is inspected at the first warehouse. Sometimes the balls are cut open to prove their integrity. This procedure was forced upon the contractors after some of them had credited up good round sums for the rubber turned in by certain seringueiros only to find that it contained a material percentage of sand, earth, hardwood and even small animals and vegetation. These extraneous substances added to the credited weight, but did not bring in any revenue to the contractor because the ultimate consumer always had to be shown that he was getting rubber according to grade and a 7-pound rock in a ball sold as pure up-river fine Para was never paid for at rubber prices.

Having satisfied himself that he was crediting up to the seringueiros only what was due, the contractor proceeds to ship his rubber down the river to Manaos or Para (Belem). If the territory in which he is engaged is located, for instance, on one of the branches of the Madeira River or equally remote place, the first stage may be by raft or flatboat to the first of the numerous falls and rapids to be found in the upper reaches of all Brazilian streams. Sometimes the rubber is portaged around the falls and reshipped on other rafts and flatboats to the next stage. When the navigable portion of the stream is reached, a transfer is made to one of the small flat-bottomed steamers and the rest of the long journey is accomplished in that manner.

Sea-going vessels reach Manaos and Para is a regular seaport for ships of almost any size.

Rubber goes from the Brazilian ports all over the world, but the bulk of it finds its way to the United States, largely by way of England. The reason for the roundabout route is that there is a lack of direct transportation facilities between Para and New York.

Advances in the old systems of coagulation met with little favor in Brazil until recently, although much ingenuity and money were spent in attempting to introduce progressive ideas. Heat coagulation without smoking is now attracting some attention, while various mechanical devices to apply the smoke by other than the wasteful methods now in use are being tried out. Chemical coagulation is a subject which is now centering the eyes of scientific Brazil and some other countries upon the production of rubber.

At the forthcoming show in New York a special booth will be devoted to the manufacture of rubber according to various processes. The latex will be taken as it came from the trees and will be subjected to all the manufacturing processes in common use and to the experimental practice of the chemists that may come into use at a future date.

Under present conditions it is necessary to macerate and

Castilloa trees close to seringueiro's quarters

reduce even the best grades of Para to a fine pulp and then to wash the pulp until it has been divested of all grit and foreign substances. This is a preliminary step toward manufacture and the rubber loses approximately 20 per cent. by weight of its original volume in washing.

The whole process of washing might be obviated if the rubber shipped as crude contained none of the impurities that are removed by washing. In the plantation type of crude this end has received more attention than it has in Brazil. The production of plantations therefore more nearly represents a net yield than does Para.

Special attention will be paid to this phase of the question at the show. It is estimated that the introduction of scientific methods in coagulation will add not only to the quality and value of the indigenous rubber, but will actually result in a greater tonnage through the saving of what now goes to waste during the process of smoking.

Dr. Eugenio Dahne, representative of the agricultural department of the Brazilian national government to the United States, denied that the new law passed by his government was to be the basis of another valorization scheme. In discussing this phase of the matter Dr. Dahne said:

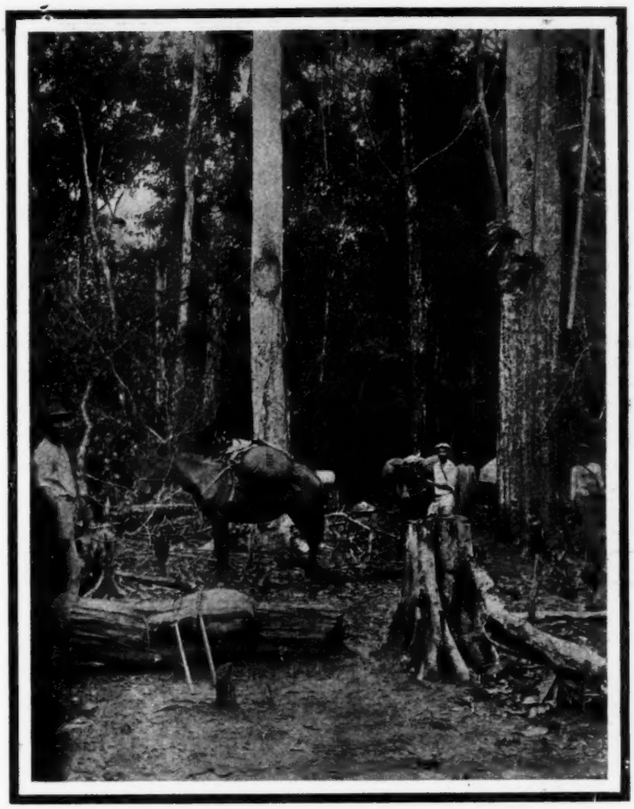
"Brazil is not trying to valorize rubber. It is seeking to increase production by remitting duties, paying bonuses for planting, so that the yield may be increased under scientific conditions; paying rewards to planters who raise the necessities of life for their employees and others, much of which must be imported at present; by subventions and bonuses to manufacturers and railroad companies and steamer lines.

"It is not a valorization scheme—emphatically not."

According to Henry C. Pearson, a leader in the rubber industry of the world, the existence of speculation in crude rubber is both affirmed and denied by those interested. In the Amazon country when rubber is low in price in the markets of the world, the producers claim that speculators are at work and, on the other hand, the traders, particularly the consumers, claim that the price level is the result of the operation of the law of supply and demand.

When prices are high the rubber producers lay it to supply and demand, while the consumers complain of manipulation. Thus showing that both branches of the rubber industry are moved by exactly the same arguments as apply in all other lines.

Castilloa trees felled in the forest are easy tapping



One method of shipping rubber to navigable waterways

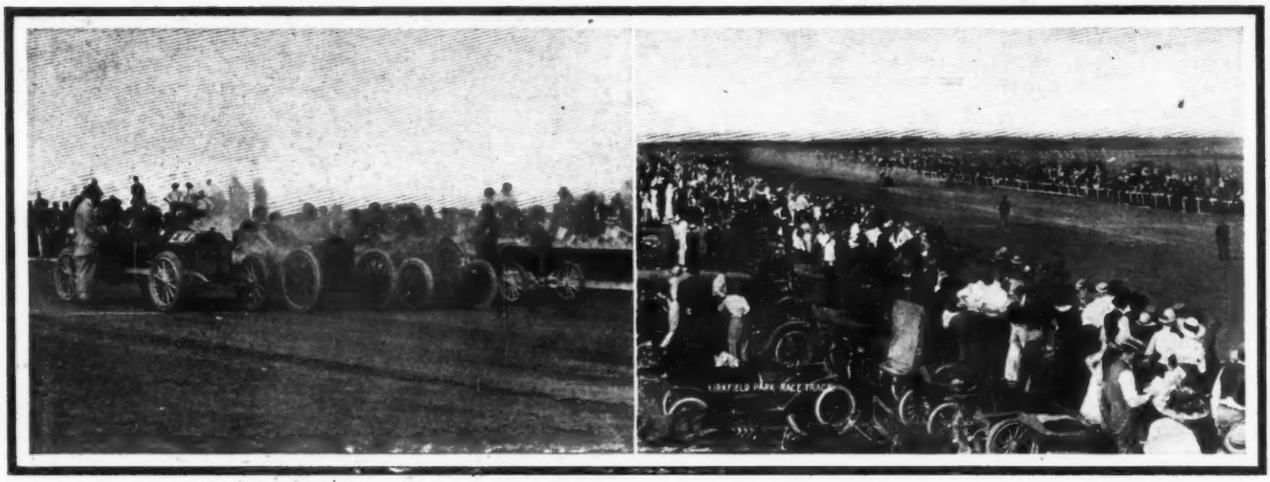
Mr. Pearson says that the whole business is speculative. There is no absolute standard as to grade. The crop yield of even a single country is exceedingly difficult to forecast. The consumers can rarely say what amount of rubber will be required in any given industry for a year ahead. The rate of exchange is also an element of uncertainty as it varies within certain limits almost day by day.

The practice of buying for future delivery is followed pretty generally by consumers.

Heretofore it has been a rather easy matter to cause wild fluctuations in the rubber market because the value of the product itself and the comparative smallness of the yield lent themselves to the purposes of outside speculation. Nowadays the branches of the Banco de Brasil, located in various places in the rubber country, are authorized to advance substantial amounts to producers. This is the plan that has been referred to as an adaptation of the coffee valorization scheme. Its effect is to make the market steadier by protecting supplies in weak financial hands. Otherwise the price level would be subject to a wild market whenever a buyer started bidding at a time when the supply was small, or a producer tried to sell a big shipment when the demands had been satisfied.

Baron Gondoriz, who nearly cornered the market four separate times, once wrote the following arraignment of the United States for the awkward commercial procedure as far as Brazil was concerned. The letter, of course, was written long ago.

"If North America really desires more reciprocal trade relations with Brazil they might be secured through the agency of a carefully managed bank at Para, based upon American capital. The monthly business there in agricultural products of the Amazon Valley amounts to $2,500,000. Fully two-thirds of this material goes to the United States and the rubber men of the United States pay American gold for it through the English banks, and the rubber producer supplies the demand in merchandise, thus providing for a heavy profit to the middleman."



Start of one of the races held at Winnipeg, Canada

View of the track during one of the contests at Winnipeg

Bob Burman Breaks Record

Clips More Than 3-4 Second From Circular Dirt Track Mark in 300-Horsepower Jumbo Benz

CLIPPING a shade more than 3-4 second from the mile circular dirt track record, the Jumbo Benz, rated at 300 horsepower and driven by Bob Burman at Brighton Beach Saturday, made a new mark for the speed brigade to shoot at.

The new record was made in a special event staged for the purpose of showing the car under ideal speed conditions. The start was impressive, following an easy circuit of the track to the head of the stretch where Burman turned loose his motor and whisked over the line at spectacular speed. He swerved to the rail at the stand and then cut across the track to the clubhouse turn, shaving the inner circle and going far out on the track at the back stretch. The straightaway is rather long and the Benz covered it at the rate of nearly 100 miles an hour, cutting in close at the stable-turn and turning into the stretch with a roar came down to the line at brilliant speed.

The timers announced the new record as 47.85 seconds. The former mark was 48.62 seconds, which was made by the Blitzen Benz with Burman driving, last year. The speed attained was at the rate of a little less than 75.24 miles an hour.

The summary of the other events follows:

UNDER 300 CUBIC INCHES, 5 MILES, NON-STOCK

Car	Driver	Position	Time
Mercer	Ainsley	1	5:13
E-M-F	Burke	2	

UNDER 600 CUBIC INCHES, NON-STOCK, 5 MILES

Cutting	Burman	1	4:45
Stutz	Lewis	2	

FREE-FOR-ALL, 3 MILES, REMY PRIZE AND BRASSARD, FLYING START IN HEATS

Benz	Burman	1	2:46
White	Kyle	2	
Mercedes	Hickman	3	

SECOND HEAT

White	Kyle	1	2:57
Benz	Burman		Collision
Mercedes	Hickman		Collision

UNDER 600 CUBIC INCHES, 40 MILES, NON-STOCK, FOR W. B. TROPHY

Ohio	Burman	1	42:9
Stutz	Lewis	2	

HANDICAP, 5 MILES

Stutz	Lewis	1	5:04

Oldfield the Star at Winnipeg

Big Program Run Off Before an Enthusiastic Crowd of 10,000 Without a Single Mishap

WINNIPEG, MAN., Sept. 6—The Ninth Annual Race Meet of the Winnipeg Automobile Club was the most successful meet ever carried out in western Canada. Barney Oldfield and the other two members of his team, Lew Heinemann and Bill Fritsch, proved a great attraction in addition to the usual club events on the big program which totalled eleven events in all.

The track record for 1 mile, previously held by W. C. Power, in a Buick car, was reduced by Oldfield in the Christie to 54 seconds flat. Oldfield also set a new track record of 1 minute, 50 seconds for the 2 miles.

The chief event of the day for local drivers was the 25-mile race for the Dunlop trophy, and was again won by Billy Rogers in a Ford car in 25 minutes, 32 seconds.

The big crowd of 10,000 people, the largest ever in attendance at a race meet in Canada, evinced the greatest enthusiasm over all events, and Rogers came in for a wonderful reception at the end of the Dunlop trophy race.

Rogers also won the mile against time in 60 seconds flat, for the Gas Power Age trophy, the Goodrich trophy, and the Club purse of $100, which in addition to the $300 first prize money in the Dunlop trophy race gave him practically a clean sweep in the local events.

The meeting was under the auspices of the Winnipeg Automobile Club, and was managed by A. C. Emmett, the club's racing manager, and not a single mishap of any nature marred the success of the meet. The meet was so successful in every respect that already negotiations for another series of races to be held next year have been started.

The following is a summary of events:

1 MILE AGAINST TIME FOR GAS POWER AGE TROPHY

Car	Driver	Time
American	W. Rogers	1:02
Firestone	Ben Davies	1:03⅘
E-M-F	W. Masters	1:09

1 MILE AGAINST TIME

Christie	Barney Oldfield	0:54

10 MILES FOR STOCK CARS, 160 CUB. INS. PISTON DISP.

Empire	E. W. Rugg	8:45

5 MILES FOR STOCK CARS, 230 CUB. INS. PISTON DISP.

Hupmobile	A. McLeod	7:10
Empire	E. W. Rugg	7:50

2 MILES AGAINST TIME

Christie	Barney Oldfield	1:50

10 MILES OPEN, STRIPPED CARS

Ford	Billy Rogers	10:40
American	Ben Davies	10:59

5 MILES

Cino	Oldfield	5:22½
Benz	Heinemann	

10 MILES, OPEN STOCK CARS ONLY

Case	Norman Rollins	13:45
Everitt	Simmins	13:55

5 MILES, OPEN

Cino	Fritsch	51:04

DUNLOP TROPHY RACE, 25 MILES, STRIPPED CARS

Ford	W. Rogers	25:32
American	Ben Davies	
E-M-F	W. Masters	

5-MILE HANDICAP

American	Ben Davies	5:50
Cino	W. Fritsch	

Alco Climbing Over Sierras

AUSTIN, NEV., Sept. 9—With 3,560 miles of its coast-to-coast trip finished, the Alco truck of Charles W. Young & Company, which is hauling the first consignment of goods from manufacturer to customer at opposite ends of the country, reported here on its way from Philadelphia to Petaluma, Cal.

The last few days of the journey have been in the nature of almost continuous mountain climbing. Checking in at Eureka, the truck left the road beside the railroad and cut its way across untraveled trails for 70 miles to Austin.

For the second time in its long journey the vehicle has encountered a blinding snowstorm that it plodded through for a whole day.

Between Elko, Nev., and Eureka the truck had to climb 5 miles over the crest of the Humboldt Mountains on a new road that was fresh plowed out of the mountain side when the old road had been washed away by recent heavy rains.

RENO, NEV., Sept. 10—*Special Telegram*—The Alco Transcontinental Truck is in this city, it having covered to date 3,753 miles. The last part of the trip from the Rocky Mountains to this point has been characterized by sand traveling which has been almost impossible in places. The sand changes its positions with every wind storm and during the last few days the truck has traveled over 3 feet of sand in places under which was the original road. From this point to San Francisco, the road is practically boulevard, so that so far as the trials of the truck are concerned, they are practically over.

Great Crowds at Hamline

More Than 100,000 Spectators Watch Annual Automobile Races at the Minnesota State Fair

MINNEAPOLIS, MINN., Sept. 9—More than 100,000 persons saw the Minnesota state fair automobile races Saturday afternoon, September 7, on the Hamline track midway between the Twin Cities. The immense grandstand was filled with 75,000, and the crowd stood in the paddock, in the infield, and on Machinery hill, overlooking the track from a distance.

The races were under direction of Dr. C. E. Dutton, state representative of the A. A. A., and were electrically timed by a Warner instrument. Rain late in the day shortened the program and prevented running off a dead heat in the first event between Oldfield in a Cino car and Ulbrecht in a White Streak. Wonderlich was barred, owing to notice of disqualification by taking part in an unsanctioned meet. G. L. Moore drove the Marquette-Buick instead. Heineman was let in on last year's record and application for license as driver in 1912. The summaries follow:

CLASS E, NON-STOCK, 5-MILE

Car	Driver	Time
Cino	Barney Oldfield	5:05

White-Ulbrecht, second; Case Disbrow, third.

CLASS C, NON-STOCK, 5-MILE, 301 TO 450 CU. IN. DIS.

Benz	Barney Oldfield	5:17 2-5

Case-Endicott, second; Jackson-Wilson, third

CLASS E, 10-MILE, CARS OF 600 CU. IN. DIS.

FIRST HEAT

Simplex	Disbrow	10:03 3-5

Case-Heineman, second; Case-Nikrent, third.

SECOND HEAT

Simplex	Disbrow	10:15

Case-Nikrent, second; Case-Nikrent, third.

ONE-MILE RECORD TRIAL

Christie	Oldfield	:51 1-5

Simplex-Disbrow, second.

AUSTRALIAN PURSUIT RACE

Cino	Oldfield	13:07 2-5
Case	Nikrent	

ONE-MILE RECORD TRIAL

Christie	Oldfield	:53 2-5

RECORD TRIALS

Simplex	Disbrow	1-Mile	:52
"	"	2-Mile	1:42 2-5
"	"	3-Mile	2:37
"	"	4-Mile	3:28 1-5
"	"	5-Mile, Record	4:20

Burman's Jumbo Benz breaking the record at Brighton

Ainslee's Mercer leading Burke's E-M-F at Brighton

Peugeot First In Sarthe Grand Prix

Goux Drives Winner To An Easy Victory—Lion-Peugeot In Front at the Finish of 2-Liter Race

Average of 101.53 Miles An Hour Made By Boillot in 7-Kilometer Race at Boulogne-sur-Mer

PARIS, Sept. 9—Special to THE AUTOMOBILE—Jules Goux, driver of the Peugeot, was an easy victor in the Sarthe Grand Prix, covering 402 miles in 5:31:54. His team-mate, Boillot, after 5 laps marked by considerable tire trouble, while in second position, had leaky water connection allowing water to escape into the crank chamber. The motor seized. The Fiat failed to start. Crespelle, in S.P.A., in the big section, was never dangerous. The 3-liter race, uniting fourteen starters, was won by Zuccarelli in a Lion-Peugeot. Thomas, in a Peugeot, set the pace, but was unable to maintain it long. Duray then took it up, running his Alcyon in the lead for awhile, then held back, due to lubrication troubles. Halen distanced Zuccarelli, going ahead, followed hard by Barriaux and Duray in Alcyons, Champoiseau and Croquet, in Schneiders, after 10 or 12 laps. Goux was easily first with Zuccarelli, Barriaux, Champoiseau and Molon closely bunched. In the last lap, 5 miles from home, the steering gear of Barriaux's Alcyon was broken while the car was only 1 minute behind the winning Peugeot. Nicodemi was held up in the traffic along the course. He started 15 minutes late, later did fast work. Guyot stopped at the starting line with clutch troubles, later, after taking on gasoline, his car was burned. The results were:

SARTHE GRAND PRIX
THREE-LITER RACE

Car	Driver	Time
Peugeot	Goux	5:31:54
S.P.A.	Leduc	6:55:15
Lion	Zuccarelli	6:12:25
Schneider	Champoiseau	6:30:36
Vinot	Molon	6:31:31
Schneider	Croquet	7:33:00
Vinot	Junior	7:16:13
Schneider	Nicodemi	7:71:36
Cote	Dever	7:41:35
Hispano	Riviere	7:50:00
Alcyon	Duray	

Boillott Stars at Boulogne

Sets Many Record Marks

PARIS, FRANCE, Aug. 30—Seven kilometers over give and take roads at an average of 101.53 miles an hour; 3 kilometers with a standing start at 86.9 miles an hour; the flying kilometer at 77.66 miles an hour; the standing kilometer at 64.6 miles an hour; the mile standing hill-climb at 58.44 miles an hour, and 300 meters standing start on a 14 per cent. gradient at 44 miles an hour—such was the star performance of Georges Boillot on the 4.3 by 7.8 Peugeot with which he won the Grand Prix race. The records were put up in connection with the annual 4-day meeting at Boulogne-sur-Mer, when Boillot was the fastest in all the events in which he competed. Undoubtedly the best performance was the 7-kilometer race at the average of 101.53 miles an hour. This was run over a moderately-surfaced road comprising a kilometer length with a gradient of 8 per cent. The previous record over this distance was held by the 200-horsepower Darracq, having a cylinder volume double that of the Peugeot, and averaging 85 miles an hour. In this run Boillot easily defeated his fastest kilometer on a perfectly straight and level road in the grand prix at Dieppe. On that occasion his time was 99.86 miles an hour. Bruce Brown's speed over the same measured kilometer was 101.67 miles an hour. It should be noted that under the Boulogne rules the cars had to take part in all the races, from the 14 per cent hill-climb to the flying kilometer without a change of gear ratio. So far as Boillot was concerned there was no attempt to increase speed by the adoption of a stream line body, the only change from his Dieppe racing equipment being the absence of mud guards. The car was fitted with Rudge-Whitworth wire wheels shod with Continental tires.

In the 3-kilometer event, standing start, the grand prix Peugeot was alone in its class. The second best time was made by a Crespelle having a single-cylinder De Dion Bouton motor of 4 by 7.8 inches bore and stroke, which was timed in 1 minute 51 2-5 seconds, being at the rate of 60.2 miles an hour. Riviere on a four-cylinder Hispano-Suiza of 2.5 by 7.8 inches bore and stroke put up 2 minutes 6 2-5 seconds; Ramet's Gregoire occupied 2 minutes 10 1-5 seconds, and the one-lunger Cohendet 3 minutes 16 4-5 seconds. In the touring car class Joerns' Opel was the fastest with 1 minute 38 4-5 seconds, being at the rate of 67.8 miles an hour. Derny, on a 3.1 by 7-inch Hispano-Suiza, was clocked in 1:57 1-5, the other winners in their respective classes being: Leduc on S. P. A., 2:10 4-5; Rigal on 3-liter Sunbeam, 2:25 2-5; Jean Crouy, on 3.1 by 5.1 Hispano-Suiza 2:34 1-5; Morel on Motobloc, 3:56 2-5; Manfait on Delage, 4:19 2-5, and Violet on single-cylinder Violette, 4:08.

Flying Trial Shows Slower Time

For the 7 kilometers, flying start, the nearest approach to Boillot's record performance of 101.53 miles an hour, was by Guyot in 4:17 2-5, being equal to 60.7 miles an hour. The car was a 3-liter model weighing fully equipped 1,700 pounds, which had been built by Guyot and Picker to the order of a leading French factory, but which was not completed in time to take part in the Grand Prix; this was its first appearance in public. Ramel on Gregoire put up 4:55 3-5 and Antony on Cohendet 7:13. Among the tourists, Joerns was again the fastest with 3:24 3-5 for the 7 kilometers, this equalling 76.5 miles an hour. He was followed by Derny on the two-seater standard Hispano-Suiza in 4:08 3-5, the other class winners being Leduc on S. P. A., 4:40 4-5; Rigal on Sunbeam 5:18; Jean Crouy on Hispano-Suiza, 6:19 3-5; Lavie on S. P. A., 6:22 1-5; Morel on Motobloc, 9:38 4-5; Manfait on Delage, 9:23 2-5; Violet on Violette, 10:09 2-5.

The mile hill-climb at Baincthum, with an average gradient of 10 per cent., was romped up by Boillot, from a standing start, at 58.44 miles an hour; Guyot came second in the racing section with an average of 36.3 miles an hour, his time being faster than that of the cars in the higher class. Crespelle's one-lunger went up in 1:39 4-5 and Ramel's Gregoire in 2:15 4-5.

As the result of the various races Derny on Hispano-Suiza won the Franchomme Cup with 257 points, being followed by Joerns on Opel with 177 points; the same driver also won the Caraman-Chimay cup, with Joerns as his second; Joerns won the Imperial Pavillion cup outright, and Rigal on Sunbeam won the Crespel cup with 73 points, followed by Jean Crouy on Hispano-Suiza with 59 points and Jouglet on Hispano-Suiza with 41 points.

Panhard Wins Prize for Style

The meeting closed with a 500 meters race, standing start and finish, when Joerns and Rigal showed the greatest amount of skill. The time at the finish was not taken until the car was standing on the line. In most cases it was necessary to use the reverse gear in order to come to a stop on the line, but a few adopted the plan of applying all brakes and swinging round facing the direction of the starting line. The results of the elegance competition gave first place to a closed Panhard.

Electric Vehicle Association Formed

New York Dealers Combine to Foster and Stimulate Trade in That Branch of the Industry

Suitable Building, Centrally Located, Has Been Selected to House All Members of the Society

THERE are 1,800 electric vehicles in service in New York, divided on the lines of pleasure and commercial cars as follows: Pleasure cars, 400; commercials, 1,400. The growth of the pleasure car industry is measured by a very few years, while that represented by the trucks and delivery wagons is as old as the industry itself.

New York, up to the present, has never been regarded as a first rate market for electric pleasure vehicles. Only ten out of a score of manufacturers are represented in the metropolis by agencies or branch houses, while the makers of business wagons having New York representation number thirteen out of a possible eighteen.

The pleasure vehicles range from light runabouts to the most massive and impressive styles of limousines and the commercials run from wagons having a carrying capacity of 1,000 pounds to big trucks in brewery and similar service which carry rated loads of 7 1-2 tons.

The pleasure cars are largely of the enclosed type, including broughams, coupé, and a few limousines and landaulets, making up fully 80 per cent. of the total.

Heretofore, save for the efforts of about three concerns, the marketing of electric pleasure cars has been unsystematic, fitful and periodic, but despite that condition the total sale in New York has reached material figures.

In Philadelphia there are more electrics in use proportionate to population than there are in New York. In Chicago and St. Louis there are many more pleasure vehicles driven by electric power than there are in New York, but the truck figures are smaller.

The New York dealers have reached the conclusion that the time is ripe for extending the business locally and with that idea in view they completed an organizatiton last Thursday that is entirely unique in the industry.

Includes Both Trade Branches

Including both branches of the trade, the local representatives came together on Thursday and formed a corporation to be known as the New York Electric Vehicle Association, which has for its avowed objects not only the usual declared intention of fostering and stimulating the trade and for protection of its members in all the usual ways, but also the definite intention of the association is to secure a building which will house many, if not all, of the local representation.

Announcement has been made that a suitable building for the purpose has been found and that the owners have agreed to enter into a lease on a 5 per cent. basis of rental. This building is several stories high, centrally located and according to the intention of the association it will be divided among the trade as follows:

The first, or ground, floor will be used as a co-operative garage, where electric cars of all descriptions will be cared for at moderate rates. The second floor will be used as a showroom; third as a salesroom and the upper floors as offices for the various companies.

The deal is still open, but it is understood that options have been given to insure its consummation at the convenience of the new association. The project of a motor mart and co-operative garage has been long considered and the idea has been worked out to some extent in the past, but until now the auspices have never appeared to be so favorable.

The list includes the following: Anderson Electric Car Company, Detroit Electric, passenger and commercial; Atlantic Vehicle Company, commercial; Babcock Electric, passenger; Baker Vehicle Company, passenger and commercial; Champion Electric Vehicle Company, commercial; Commercial Truck Company of America, commercial; Couple Gear Company, commercial; Electric Omnibus Corporation, commercial; Flanders Manufacturing Company, passenger: General Motors Truck Company, commercial; General Vehicle Company, commercial; Healey and Company, passenger; Hupp-Yeats Electric Company, passenger and commercial; International Fritchle Company, passenger; Lansden and Company, commercial; Rauch and Lang, passenger; Studebaker Brothers Company, of New York, passenger and commercial; Walker Vehicle Company, commercial and Ward Motor Vehicle Company, commercial.

The following officers were selected to perfect the organization on a permanent basis and to start it under auspicious circumstances: Arthur Williams, president; William P. Kennedy, vice-president. The secretary and treasurer were not chosen at the meeting as it is intended to combine the offices and place their administration in the hands of a paid official of wide experience. The selection will be made by the president or executive committee.

The following board of directors was selected: E. W. Curtis, Jr., General Vehicle Company; S. W. Menefee, Anderson Electric Car Company; Nathaniel Platt, Baker Vehicle Company; C. Y. Kenworthy, Rauch and Lang; M. G. Macdonald, Hupp-Yeats; W. R. Chandler, Flanders; George H. Phelps, Studebaker; V. A. Villar, Champion; John H. Kennard, Couple Gear; W. L. Case, Lansden; Charles A. Ward, Ward, and A. B. Roeder, International Fritchle.

The executive committee consists of the following: Nathaniel Platt, C. Y. Kenworthy, S. W. Menefee and V. A. Villar.

Calendar of Coming Events

Shows, Conventions, Etc.

Sept. 5-15	San Jose, Cal., Automobile Show, San Jose Automobile Dealers' Association.
Sept. 14-21	Chicago, Ill., Annual Fall Festival and Show, Chicago Automobile Trade Association.
Sept. 17-20	Denver, Col., Convention International Association of Fire Engineers.
Sept. 23-Oct. 3	New York City, Rubber Show, Grand Central Palace.
Dec. 7-22	Paris, France, Paris Automobile Show, Grand Palais.
Jan. 4-11	Cleveland, O., Annual Automobile Show.
Jan. 11-25	New York City, Thirteenth Annual Show, Madison Square Garden and Grand Central Palace, Automobile Board of Trade.
Jan. 20-25	Philadelphia, Pa., Annual Automobile Show.
Jan. 25-Feb. 1	Montreal, Que., Automobile Exhibition, R. M. Jaffray, Manager.
Jan. 27-Feb. 1	Detroit, Mich., Annual Automobile Show.
Jan. 27-Feb. 1	Scranton, Pa., Annual Automobile Show, Automobile Association of Scranton.
Feb. 1-8	Chicago, Ill., Annual Automobile Show.
Feb. 10-15	Minneapolis, Minn., Annual Automobile Show.
Feb. 17-22	Kansas City, Kan., Annual Automobile Show.
Feb. 24-Mar. 1	Omaha, Neb. Annual Automobile Show.
Feb. 24-Mar. 1	St. Louis, Mo., Annual Automobile Show.
March 3-8	Pittsburgh, Pa., Annual Automobile Show.
March 8-15	Boston, Mass., Annual Automobile Show.
March 17-22	Buffalo, N. Y., Annual Automobile Show.
March 19-26	Boston, Mass., Annual Truck Show.
March 24-29	Indianapolis, Ind., Annual Automobile Show.

Race Meets, Runs, Hill Climbs, Etc.

Sept. 11-14	Buffalo, N. Y., Third Annual Reliability Tour, Automobile Club of Buffalo.
Sept. 17	Milwaukee, Wis., Grand Prize Race.
Sept. 20	Milwaukee, Wis., Wisconsin Challenge and Pabst Trophy Races.
Sept. 21	Milwaukee, Wis., Vanderbilt Cup Race.
Sept. 29-30	St. Louis, Mo., Track Races, Universal Exposition Company.
Sept.	Washington, D. C., Reliability Run, Automobile Club of Washington.
Oct. 7-20	Chicago, Ill., Reliability Run, Chicago Motor Club.
Oct. 21	National Tour American Automobile Association.

The AUTOMOBILE

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Decreasing Accidents

THE fatal grade crossing has claimed over a score of victims during the past week. Whole parties have been hurled into eternity, in other cases one or two have been spared from a load to disclose the sorrowful tale of failure to hear the whistle, failure to hear any warning, or inadequate roadside warning of the concealed crossing. **So numerous are automobiles becoming that the ringing bell by day and the bell and red light by night are becoming imperative in many places.** The conventional railroad crossing sign erected by the railroad company but a few feet from the track is hopelessly inadequate as a warning to automobiles.

Modern inventions and improvements call for modern guardian factors, and while the present railroad sign a few feet from the metal rails was sufficient in the days of horse vehicles it is not sufficient today, and the legislatures or the federal government should insist on railroad companies putting up crossing signs that are adequate for the modern means of locomotion.

It is not to be expected that railroad companies will without request, without persuasion or perhaps without legislation go ahead with these necessary improvements, and it is imperative that the motorists band together and properly present their demands and secure the desired legislation. In the end the railroads would find it cheaper.

A Transcontinental Road

Discarding Swaddling Garments

AMERICA has become accustomed to the automobile people doing things. The spirit of the century is reflected in the activities of the industry. Factories have been built, equipped and started within a few short months; concerns have grown from a capacity of a few hundred cars per year to as many thousands per annum within a 3-year span; other factories have started in the thousand scale and have mounted rapidly. Selling organizations have been developed and spread over the entire country in a few months; and so throughout the industry it has been that spirit of progress that has characterized every department of the automobile field.

There remains one great field in which the automobile is vitally concerned and one in which despatch is imperative, and while this field will by some be only indirectly connected with the industry, yet to him who lifts the veil and beholds the real factors that are propelling them industry onwards with such phenomenal strides, good roads are placed high.

The plea for good roads is very much of a threadbare argument: This subject suggests the old-time convention, the table-pounding, cross-roads orator and the sleeping auditors. **Never before has the time been more opportune for road improvement than today. Where improvements have been made cars have sold as a direct result.** A new stretch of road in Florida along the east coast was directly responsible, according to local authorities, for the sale of over 100 cars. What happened in Florida has happened in Iowa and will happen in Texas, in New Mexico, in Oregon and in the Dakotas.

The good-roads movement needs more than anything else today the spirit of "Do something. Stop talking and act." Robert G. Ingersoll once remarked: "The hands that help are better far than lips that pray." The helping hand is needed more today than ever before. Every month a car starts out surveying a new transcontinental highway; the daily papers carry despatches of going through bridges; getting lost on the desert; being held up by bridge washouts; being delayed by rain on the gumbo roads, and a score of other delays, but we never read of actual road improvements, although undoubtedly local enterprise along the line of route must be operating, yet these local activities have not yet been united into a tangible whole. Help is what is needed.

There have been enough of routes, enough of getting lost, enough of delays, but not enough actual work. What is needed is stone—crushed stone, along the roadside so that it can be put on the road. Stone is needed from the Atlantic to the Pacific, and if the automobile world expects to get this ribbon of stone from ocean to ocean within the next decade it is imperative that it take up the white man's burden and provide the stone.

Already an embryonic movement in this direction has been started, but it is yet uncertain as to the actual materialization of the scheme. Conceived in In-

diana is the plan of raising $10,000,000 from the automobile makers, dealers, owners and accessory manufacturers. Each maker and dealer is asked to give one-third of one per cent. of his gross receipts each year for 3 successive years. An owner may give $5, $100, $1,000 or any other sum. **In this way over $10,000,000 can be raised. This is enough money to buy crushed rock to cover a 3,300-mile road from New York to San Francisco and to deliver this rock at the railroad siding nearest to the point of use.** This is all that is proposed to be done by automobilists. The counties and states must sign contracts to do the road building under engineering supervision. The money is to be raised in 3 years and the road completed in that length of time.

This is one of the best good roads suggestions that has occurred. It is to be hoped that it goes through. It will, if the automobile manufacturers are awake to the signs of the times and if the men at the helms of of the big industries realize, and have properly weighed, the big factors that go to make up the successes of the industry.

If a stone road could be built from ocean to ocean in 3 years on these lines it would be the greatest incentive to good roads that America ever witnessed. It would advertise the automobile industry as no other movement has done since the inception of the industry. It would interest the farmer in the motor car and would bring home to him the value of good roads to such an extent that other transcontinental routes would be started, feeders to these lines would be opened, etc. In a word, road building would throw off its swaddling garments and take on the attributes of an adult.

Country's Crops Show Big Gain

Wheat Is Expected to Total Over 700,000,000 Bushels While Corn Will Certainly Make 3,000,000,000

THERE will be over a bushel of potatoes, more than there was last year for every man, woman and child in the United States, according to the September crop report issued by the government covering, not only potatoes, but all other crops.

Final figures will probably show a gain over the official figures, as ideal crop weather has been enjoyed since the tabulations were made. Corn will certainly go over the 3,000,000,000 bushel mark, and, while wheat is made as a harvest, it is expected that the official figures of 690,000,000 bushels will be raised to a full, round 700,000,000 by the fine threshing weather and its tendency to keep down waste.

It was estimated in THE AUTOMOBILE last month that the total revenue of the farmers this season would be $1,200,000,000 greater that it was in 1911. These figures are below the mark indicated by the latest report. Based upon current prices, the increase over last year should be in the neighborhood of $1,500,000,000. The figures are as follows:

	Sept.,1912.	1911.
Winter Wheat—		
Bushels	390,000,000	430,656,000
Acreage	25,744,000	29,162,000
Spring Wheat—		
Bushels	300,000,000	190,682,000
Acreage	19,201,000	20,381,000
Total Wheat—		
Bushels	690,000,000	621,338,000
Acreage	44,945,000	49,543,000
Corn—		
Bushels	2,995,000,000	2,531,488,000
Acreage	108,110,000	105,825,000
Oats—		
Bushels	1,290,000,000	922,298,000
Acreage	37,844,000	37,763,000
Rye—		
Bushels	35,000,000	33,119,000
Acreage	2,097,000	2,127,000
Barley—		
Bushels	209,000,000	160,240,000
Acreage	7,754,000	7,627,000
Buckwheat—		
Bushels	18,000,000	17,549,000
Acreage	835,000	833,000
Potatoes—		
Bushels	398,000,000	292,737,000
Acreage	3,689,000	3,619,000
Tobacco—		
Pounds	976,000,000	905,109,000
Acreage	1,194,200	1,012,000
Flaxseed—		
Bushels	29,000,000	19,370,000
Acreage	2,992,000	2,757,000
Rice—		
Bushels	23,000,000	22,934,000
Acreage	710,000	696,000
Hay—		
Tons	72,000,000	55,000,000
Acreage	49,209,000	43,017,000

Washington Has Truck Parade

More Than 300 Cars Were in Line—Great Enthusiam Was Displayed By the Large Crowds of Spectators

WASHINGTON, D. C., Sept. 7—Washington Labor Day in automobile circles was made conspicuous by the truck parade given under the auspices of the automobile department of the Washington *Post*, which brought out such an array of machines as has seldom, if ever, been seen in the East. The streets of Washington were crowded with on-lookers before the parade started and as the procession wound its way along the route selected, the enthusiasm was contagious. In local motoring circles the pageant was given the heartiest possible indorsement. More than 300 cars formed the line of the parade and the decorations were of such a character as to indicate much trouble and expense on the part of the participants. Prizes had been offered for two classes, one for the decorated division, the other for the non-decorated division. S. S. Grogan acted as official scorer and there were five judges.

Practically all the manufacturing companies were represented by one or more cars in line. The Wilcox Trux Company won a handsome silver loving cup offered by the Washington *Post* to the company having the greatest number of cars in line. The Wilcox people entered thirty-seven machines.

The Studebaker Corporation of America was second, with twenty-one cars in line. The Ford people had sixteen entries, coming third.

Packard display in Washington truck parade

Entrance to Paruco Park, pleasure ground recently opened for the use of employees of the Pennsylvania Rubber Company, Jeannette, Pa.

PENNSYLVANIA Rubber's Park Opened—Paruco Park, the pleasure ground for the employees of the Pennsylvania Rubber Company, Jeannette, Pa. Over 1,000 of the rubber company's men and their friends were present to inspect the new park and listen to the entertainments of the afternoon. The above photograph gives a view of entrance to Paruco Park.

Ferguson with Carter Car—Don Ferguson has severed his connection with the Studebaker Corporation to accept the position of chief engineer with the Carter Car Company of Pontiac, Mich.

Betts on Buffalo Club's Board—C. Walter Betts has been elected member of the board of directors of the Automobile Club of Buffalo, Buffalo, N. Y., succeeding E. R. Thomas, who has resigned.

Currier Joins American—R. B. Currier, who was formerly connected with the Interstate Sales Agency of Columbus, O. has accepted the position of chief inspector for the American Motor Car Company, Indianapolis, Ind.

Outdoor Show at St. Louis—There are in St. Louis eighty-three automobile manufacturers and dealers and all but two of these will have exhibits at the out-door show which will be held here at one of the summer gardens the week of October 7.

Stockfisch with Texas Oil—John M. Stockfisch, formerly with the Havoline Oil Company as New York division manager, has resigned to accept a position in a like capacty with the Texas Oil Company, 17 Battery Place, New York City, manufacturers of Texaco Oils.

Lu Lu Sociability Run—The second annual sociability run of the Lu Lu Temple Automobile Club, a motor car organization born in July of last year, will be held on September 21 to Atlantic City, N. J. Sterling silver prizes will be awarded the four participants finishing nearest the secretly computed time.

Chauffeur Tax Amounts to $1,000,000—According to statistics just made public by Secretary of State Lazansky, of Albany, N. Y., the tax levied on chauffeurs and motor vehicles for the fiscal year ending on September 30 will total $1,000,000 The greatest gain in any one year in the tax receipts was last year owing to introduction of motor trucks into business but last year's figures will be surpassed by this year's tax.

Atlanta Show Space Taken—At a meeting of the Atlanta Automobile and Accessory Association, Atlanta, Ga., held recently 19,850 square feet of floor space in the Atlanta Automobile show of November 16-23, was engaged and checks for 25 per cent. of the amount due were paid in. This means that more space has already been subscribed for than was used last year and that the financial success of the show is assured.

Advocates Motor Truck Service—Delegated by Mayor Blankenburg of Philadelphia, Pa., to study the high cost of living problem and make suggestions for amelioration of present conditions, Professor Clyde L. King, of the University of Pennsylvania, advocated the encouragement of motor truck service between the source of supply and consumer as one of the avenues of economy, high transportation charges figuring as one of the chief items of expense.

Chase at N. Y. State Fair—At the New York State Fair at Syracuse, N. Y., the Chase Motor Truck Company will have an exhibit of its machines and will also entertain its district managers that week, including F. B. Porter of New York, C. K. Thomas of St. Louis, E. F. Howell of Philadelphia and E. B. Curtiss of Cleveland. W. C. Van Sant, for several years western salesman, has been made district manager for the Pacific Coast with headquarters in Los Angeles.

New Agencies Established During the Week

PLEASURE CARS

Place	Car	Agent
Akron, O.	R-C-H	The Akron Auto Garage Co.
Albany, N. Y.	Jackson	Preston's Garage.
Atlanta, Ga.	Pullman	E. D. Crane & Co.
Boston, Mass.	Flanders	John S. Harrington & Co.
Boston, Mass.	Pullman	Boston Motor Co.
Buffalo, N. Y.	Studebaker	A. W. Haile Motor Co.
Buffalo, N. Y.	Mighty Michigan	Progressive Motor Car Co.
Burlington, N. J.	R-C-H	Cortland L. Fort
Charlotte, N. C.	R-C-H	Piedmont Motor Car Co.
Chicago, Ill.	Nyberg	John W. Hayden
Cincinnati, O.	Pullman	R. W. Pagels
Colborne, Ont.	Ohio	The Canadian Ohio Motor Car Co.
Columbus, O.	Pratt—40	B. C. Ausel
Crisfield, Md.	Detroiter	L. S. Nock
Denver, Colo.	Cartercar	Colorado Cartercar Co.
Detroit, Mich.	Rambler	Geo. H. Wahl
Havana, Cuba	Pullman	American Vulcanizing Co.
Hubbard, Iowa	Henderson	The Elmer S. Maine Co.
Huntington, N. Y.	R-C-H	Walter H. Flessel
Indianapolis, Ind.	Krit	The State Automobile Co.
Indianapolis, Ind.	Marathon	The State Automobile Co.
Indianapolis, Ind.	Marion	A. & M. Service & Sales Co.
Kankakee, Ill.	R-C-H	Lincoln Garage & Repr. Co.
LaSalle, Ill.	R-C-H	F. W. Koenig
Lancaster, Pa.	Pullman	B. F. Futer
Leamington, Ont.	Cadillac	R. H. Ellis
Lebanon, Pa.	R-C-H	Commercial Garage
Live Oak, Cal.	R-C-H	Henricksen & Smith
Louisville, Ky.	Hupp-Yeats	W. L. Lyons
Louisville, Ky.	Franklin	The Younger Auto Co.
Marshall, Ind.	R-C-H	Thompson & Walther
Mechanicville, N. Y.	Franklin	G. M. Fort & Son
Menomonie, Wis.	R-C-H	Menomonie Auto Co.
Newark, N. J.	Pullman	Van Deman & Wainwright
Newman, Ill.	R-C-H	Henley Eversole
Pittsfield, Mass.	Pullman	Arthur LaMott
Port Colborne, Ont.	Metz	Guiding Star Bicycle Store
Portland, Ore.	Buick	Buick Auto Co.
Portland, Ore.	Cole	Neate & McCarthy
Portland, Ore.	Detroiter	H. L. Keats Auto Co.
Portland, Ore.	Stutz	Finger & Mann
Portland, Ore.	Warren	The Gerlinger Auto Co.
Portsmouth, Va.	Detroiter	A. E. Harmon
Quebec, Can.	Pullman	J. E. Paulin
Rochester, N. Y.	R-C-H	A. Elliott
Rochester, N. Y.	Velie	Ferdinand Crosby
Salem, O.	Krit	H. L. Slagle & Co.
Saskatchewan, Can.	White	Imperial Garage
Seattle, Wash.	R-C-H	Ira D. Lundy
Sisterville, W. Va.	Pullman	Tyler Motor Co.
Spokane, Wash.	Pierce-Arrow	H. J. Banta
Syracuse, N. Y.	Hupmobile	Jefferson Garage Co.
Syracuse, N. Y.	National	Jefferson Garage Co.
Toledo, O.	Krit	Ford Bros. Co.
Toronto, Can.	King	Matheson Automobile Co.
Troy, N. Y.	R-C-H	Conway & Bussey
Windsor, Ont.	King	F. S. Evans
Winnipeg, Can.	Reo	Percy Plewes

COMMERCIAL VEHICLES

Place	Car	Agent
Syracuse, N. Y.	Federal	A. J. Jackson
Toledo, O.	Moore	Fred Kopf

Has Stutz Cleveland Branch—Harry S. Moore has been appointed special factory representative and general manager of the Stutz Motor Car Company, Indianapolis, Ind., in Cleveland, O.

Locomobile Makes New Record—The Locomobile broke the record for an automobile trip from Denver to Chicago, a distance of over 1,200 miles, Leo Galitzke driving. The actual running time was only 39 hours and 25 minutes.

Champion Manager Louisville Diamond—Henry Champion is the new manager of the Louisville, Ky., office of the Diamond Rubber Company. He succeeds L. G. Haskell, who has joined the sales force of the Leyman Motor Company.

Zilio Agency in Louisville—The Zilio Sales Company, Louisville, Ky., has acquired the general agency for the Zilio tire filler in Kentucky, Southern Indiana and North and South Carolina. This concern has opened an office in the Courier-Journal building in Louisville.

Hunting in Africa with an R-C-H—Big game tracking over the brush grown veldt of Africa is an exhilarating sport according to D. C. Morrison of the Rewika Ranch, Kyambu, British East Africa. The accompanying photograph shows him hunting in almost shoulder high grass with his R-C-H.

Tennant to Enter Own Business—W. G. Tennant, a pioneer in Gotham automobile circles and well known as head of the Peerless Motor Car Company of New York City, has resigned to assume active management of the Tennant Motor Limited, Chicago, Ill., distributors of The Henderson.

Henshaw Resigns from Thomas—It is announced that C. S. Henshaw has resigned as manager of the Thomas Motor Company of New York to take effect in the near future. It is not known at the present time what course Mr. Henshaw is to follow. He has been prominently identified with the automobile industry since the very inception, his name having been linked with well-known concerns, particularly the Thomas, for years. His permanent residence is Belmont, Mass.

Wolverine Club After Members—President Porter of the Wolverine Automobile Club states that the taking in of the club by the Automobile Association of America is assured. The latter body has made the Wolverine Club a proposition which will be voted on and accepted at the latter's next meeting the last Thursday in the present month. The new club house proposition is also assuming a favorable aspect. To date 560 members have been enrolled under the new arrangement which exacts that each take $100 worth of stock in the new house. From now on a systematic canvass for members will be instituted and the club members feel assured that by the first of the year the necessary 1,500 membership will have been secured. Many representative figures here in the industry have already been added to the membership list.

D. C. Morrison, of the Rewika Ranch, Kyambu, British East Africa, uses his R-C-H runabout for hunting big game

R-C-H service station recently opened in Detroit, Mich.

R-C-H Detroit Service Station—The new service station of the R-C-H Corporation, Detroit, Mich., is shown in the accompanying photograph. It will be used to supply replacements and the storing of cars on order. Each district manager will have his headquarters in the service building and from this point the road men will make trips through the territory.

VortKamp Sales Manager Mayer—Mr. H. F. VortKamp has joined the Mayer Carbureter Company, Buffalo, N. Y., in the capacity of sales manager. His offices will be in Detroit, Mich.

Oakland Philadelphia Branch—The Oakland Motor Car Company, Pontiac, Mich., will establish a branch in Philadelphia to succeed the Oakland Company of Pennsylvania. The branch will be in charge of Edward K. Leech.

Ruckert Spokane Goodyear Manager—W. C. Ruckert has been appointed Spokane, Wash., manager of the Goodyear Tire & Rubber Company, succeeding C. B. Clement, who has joined the Studebaker agency in Portland, Ore.

Abbott-Detroit's Heavy Load—An Abbott-Detroit recently in Byers, Tex., pulled three heavy farm wagons, a surrey and two buggies linked together. In the vehicles were 78 persons. The total weight pulled was nearly 14,000 pounds.

Jurgewitz Is Portland Manager—H. A. Jurgewitz has been appointed Portland, Ore., manager of the Goodyear Tire Company. He succeeds W. T. Powell, who has been made Pacific Coast district manager for the Goodyear people with headquarters in San Francisco.

Indiana State Fair's Show—The automobile show held in connection with the Indiana State Fair in Indianapolis, September 2 to 6, proved quite successful, a satisfactory number of sales being reported. About 140,000 people visited the fair during the week.

Wilkie to Manage Buick—Edward Wilkie has been appointed manager of the Buick Motor Company's branch in Washington, D. C., succeeding T. S. Johnston, who resigned to accept the position of Southern sales manager for the Republic Motor Company.

Many Cars Entered—The Portland-Astoria-Gearhart automobile tour of September 1-2, the official run of the Portland Automobile Club to boost the proposed Portland to the Sea highway is attracting much attention and upwards of 100 machines have signed for the run.

Gibbons Consulting Engineer—Mr. N. B. Gibbons, A.M.I. Mechanical Engineer, has commenced business on his own account as consulting engineer in Montreal, Canada. In addition to engineering practice Mr. Gibbons will specialize in automoble and motor boat work.

Wilmington Patrol Economical—An interesting statement was issued recently showing where the police department of Wilmington, Del., saved $655.20 during the past year in its patrol operation due to the substitution of an automobile for two horse-drawn vehicles and four horses.

Willman Sales Manager Warren—G. L. Willman has been promoted to the office of sales manager for the Warren Motor Car Company, Detroit, Mich. He succeeds George D. Wilson, who has gone to New York City as eastern representative of the Warren Company.

Bull Moose Squadron Starts—A flying squadron of automobiles equipped with a street piano, a printing press and other novel features, started from the Progressive State Headquarters in New York City recently for Syracuse, N. Y., where the State Bull Moose Convention is to be held in the Arena.

Forms Owners' League—The Automobile Owners' Protective League is the name of an organization now being formed in Dallas, Tex. More than 400 automobile owners have already joined the organization. The object of this league as outlined by O. H. Bettes, manager, will be co-operative.

New British Truck Company—The British Business Motors, Ltd., Coventry, England, has just been formed to manufacture the Cunard commercial vehicles. Mr. H. G. Burford is managing director and his co-directors are S. F. Edge and H. T. Vane, general manager of S. F. Edge, Ltd.

Taxpayers Want Good Roads—Taxpayers of Baltimore county filed a bill in the Circuit Court of Towson against the Maryland State Roads Commission asking that the commission be required to expend in Baltimore county $300,000 of the $3,170,000 road loan authorized by the last Legislature.

Want to Build Cars—Joseph E. and August J. Hoffweber, of La Crosse, Wis., are negotiating with capital in several industrial centers of Wisconsin for the financing of a company which has been incorporated under the style of Hoff Motor Car Company, capital $500,000, to manufacture a line of pleasure cars.

Moorhead Run Success—Nineteen automobiles participateu in the annual sociability run of the Moorhead, Minn., Automobile Club recently. The run was from Moorhead, south along the Minnesota side of the Red River of the North to Breckenridge and then to Wahpeton, N. D. The roads encountered on the trip were excellent.

Automobile Incorporations

AUTOMOBILES AND PARTS

BALDWIN, N. Y.—Acme Motor Rental Company; capital $5,000; to conduct an automobile livery business. Incorporators: George Wintjen, Adam Weiselbach, Allen C. Ewing.

BUFFALO, N. Y.—International Motor League, Inc.; capital, $1,000; to deal in motorcycles, automobiles, motor vehicles. Incorporators: Julius J. Eyring, Frederick A. Hipp, Henry C. Aman.

COLUMBUS, OHIO.—The Pharis Tire & Rubber Company; capital, $25,000; to manufacture and sell automobile and motorcycle tires. Incorporators: Carl Pharis, Roy W. Pharis, Emma W. Pharis, Mabel A. Pharis, Clara Weiler.

DUNKIRK, N. Y.—Dunkirk Specialty Company; capital, $5,000; to manufacture and sell gasoline, oil tools, implements, etc. Incorporators: P. C. Candee, Seth B. Culver, Justus M. Henderson.

FORT WORTH, TEX.—Tire Filler Company; capital, $110,000; to manufacture tire filling material. Incorporators: J. A. Reynolds, N. M. Pressley, H. B. Lyne.

SKANEATELES, N. Y.—The Skaneateles Garage Company; capital, $6,000; to carry on a garage business. Incorporators: George D. Cuddeback, Edward J. Scott, Florence K. Scott.

NEW YORK CITY, N. Y.—United Tire Sales Company; capital, $500; to sell tires. Incorporators: A. G. Thaantum, Joseph T. Weed, Max Greenberg.

NEW YORK CITY, N. Y.—S. Whyle Merritt Company; capital, $10,000; to deal in motors, engines, etc. Incorporators: S. W. Merritt, Clyde V. Morse, Paul Thamm.

PORT CHESTER, N. Y.—Lowden & Flint's City Garage, Inc.; capital, $3,000; to carry on a garage business. Incorporators: Clifford H. Flint, Grace M. Flint, Arthur B. Lowden.

Dahl Tire's New Headquarters—The Dahl Punctureless Tire Company of America will, on or about September 1, have its headquarters at 246 West Fifty-ninth street, New York City.

Franklin Taxicabs in Texas—A fleet of four Franklin taxicabs has just been purchased by the Franklin Taxicab Company, San Antonio, Texas, and will be put into active service within the next two weeks.

Too Many Road Signs—The Motor Club of Harrisburg will shortly take up the question of having certain signs along different highways eliminated. In the opinion of many autoists there are too many signs in some sections.

Ford Quick Lunch Counter—Zack Benn of Anacortes, Wash., has recently transformed his Ford touring car into a traveling quick lunch counter, and has equipped it with electric lights, refrigerator and all other necessaries.

Road Improvement in Maryland—Contractors have begun work on improvement of the Frederick road from Irvington to Bishop's Lane, Catonsville, Md., the improvements to be of macadam. This stretch of road is three miles and will cost $20,000.

Odd Use of Studebaker Car—The accompanying picture shows a Studebaker car used by J. W. Kain of Chicago, Ill., who is in the saw filing business. Though very novel in design, still it is very practicable as it covers more than twice the amount of territory of a horse.

Dallas Leading Texan Automobile City—The four thousandth automobile license to be issued from Dallas, Texas, will be given out next week. This ranks Dallas as the leading automobile city in the state, and gives over a thousand licenses more than any other city in Texas.

Denby with Federal Motor Truck Company—Garvin Denby, brother of Senator Edwin Denby, has resigned his position as assistant to the president of the Solvay Process Company to assume the position of sales manager of the Federal Motor Truck Company, Detroit, Mich.

Ford Company Buys Block—The Ford Motor Car Company of Chicago, Ill., has completed the purchase of an entire block of land in that city. The company will build a five-story building on this site, which will be used as a warehouse, garage and assembling plant and will contain the show and salesrooms.

New Dahl Tire Company—The Dahl Punctureless Tire Company of America has been incorporated under the laws of South Dakota. It will take over the business which has been established and organized by the Dahl Punctureless Tire Company of Minnesota and will carry on and extend the business throughout the world.

J. W. Kain, of Chicago, uses his Studebaker in business

Wilby on Across-Canada Tour—Thomas W. Wilby recently started from Halifax, N. S., on an auto trip which he plans to end at the western coast of Vancouver Island. In making this across-Canada trip Mr. Wilby aims to demonstrate the feasibility of a Canadian highway. He is traveling under the auspices of the Canadian Highway Association.

San Francisco Garage Opened—The Pioneer Automobile Company of San Francisco opened its new branch in Oakland during the past week. The new building is a spacious structure with a large frontage on Twenty-fourth street, well lighted and affording plenty of room for service department. C. A. Penfield is manager of the Oakland branch.

Cutting Pathfinder Chicago Tour—A Cutting, 1913 model, has been selected as the pathfinding car for the Chicago reliability run, which will start October 7 and end October 11. The car left Chicago Wednesday, September 4, and has 1,000 miles of northern Illinois and eastern Iowa to cover. L. J. De Broux, of the Dan Dodge Company, distributors for Cutting cars in Illinois, is driving the pathfinder.

British Columbia's Large Registration—Figures supplied by the provincial police of Vancouver, B. C., who handle automobile licenses for the province, show that 3,568 machines have been registered in British Columbia. Of these it is estimated that about 1,800, or a little more than half, are issued from the Vancouver office, covering the city of Vancouver, New Westminster, North and South Vancouver and all the adjoining municipalities.

Franklin Sales Increase—The record of Franklin dealers during the past selling year which closed on August 31 shows a steady increase according to a report from the office of the Franklin Automobile Company. For January, 1912, sales were 86 per cent. over sales for the corresponding month last year; for February 100 per cent., etc. July and August, the dull summer months showed an increase of 435 per cent. and 330 per cent. respectively.

A Mighty Michigan's California Branch—The distribution of the Mighty Michigan cars for 1913 in California, Nevada, the Hawaiian Islands and the Orient will be made by the Michigan Motor Car Company's California branch, a $1,000,000 corporation just organized. The organization and its big enterprise is the result of a visit to the East by C. P. Kiel. The following officers were elected for the new concern: V. L. Palmer, president; F. B. Lay, Jr., first vice-president; W. H. Cameron, second vice-president; G. H. Daugherty, third vice-president; C. P. Kiel, treasurer and general manager; C. C. Boob, secretary. The above with the son of C. P. Kiel constitute the board of directors.

Automobile Incorporations

RICHMOND HILL, N. Y.—Dillman-Melin Motor Company; capital, $20,000; to manufacture motors. Incorporators: William C. Dillman, Richard A. Dillman, Bero W. Melin, W. J. Bissell, Fred J. Hoerlein.

VANCOUVER, B. C.—Pacific Auto Company; capital, $500,000; to engage in the taxicab business. Incorporators: Noel Humphreys, G. M. Gibbs, A. S. French, J. L. Langan.

ACCESSORIES AND GARAGES

BUFFALO, N. Y.—Continental Motors Corporation; capital, $100,000; to manufacture motors. Incorporators: Gordon F. Matthews, Frank V. Whyland, Allen E. Choate.

CINCINNATI, O.—The Ideal Steel Wheel Company; capital, $500,000; to manufacture a patented automobile wheel. Incorporators: J. B. Fitch, E. H. Maffey.

FORT WAYNE, IND.—Drage-Harris Motor Truck Sales Company; capital, $10,000; to manufacture motors. Incorporators: Frank A. Drage, D. H. Harris, Herbert L. Somers.

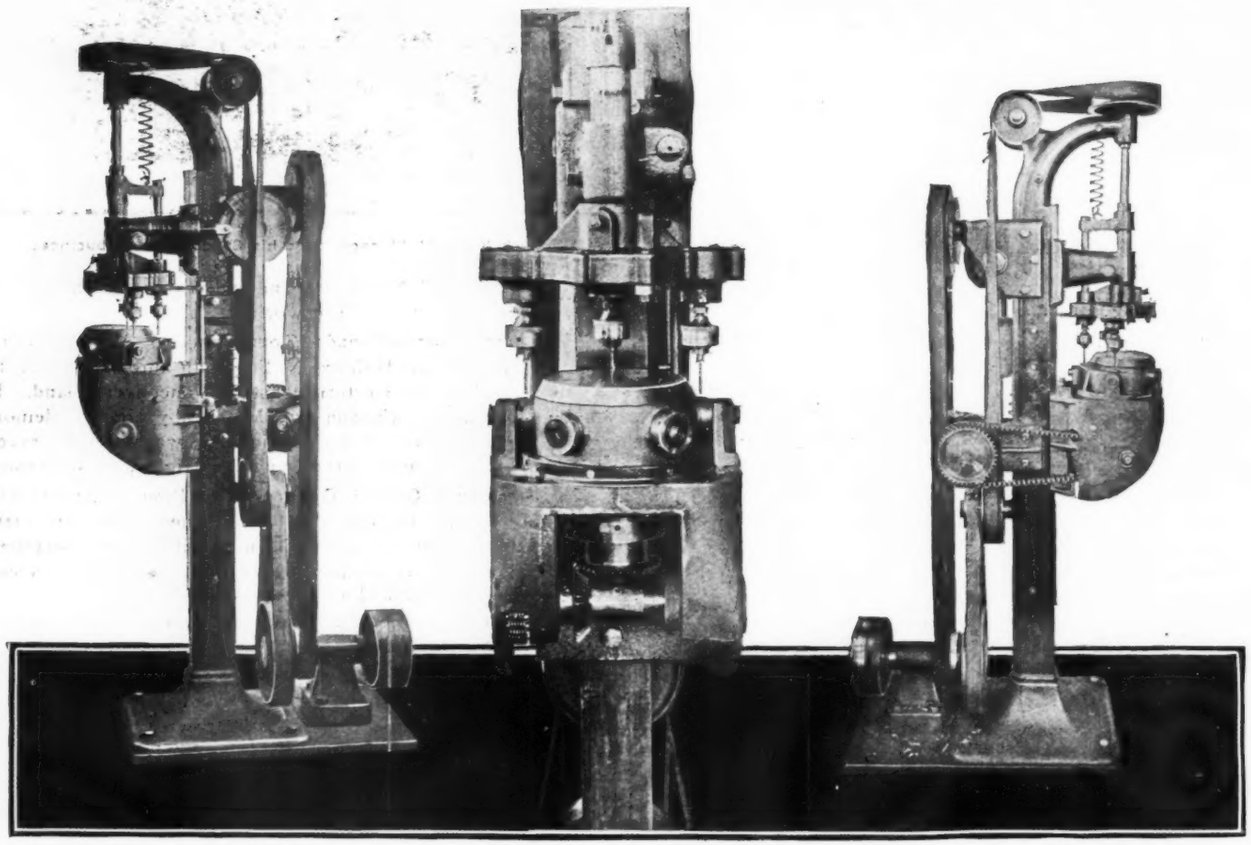
LA CROSSE, WIS.—Hoff Motor Car Company; capital, $500,000; to manufacture automobiles and motor vehicles. Incorporators: Joseph E. and August J. Hoffweber.

NEW YORK CITY, N. Y.—The Salvini Electrical Horn Manufacturing Company; capital, $50,000; to manufacture automobile horns and supplies. Incorporators: Edwin Salomon, Godfrey S. Salomon, Salvatore Salvini.

SOUTH BEND, IND.—Manufacturers' Plant & Power Company; capital, $20,000; to manufacture auto bodies. Incorporators: S. W. Nicholson, J. C. Paxson, V. E. Paxson.

CHICAGO, ILL.—The German American Car Company; increase of capital from $500,000 to $700,000.

Factory Miscellany



Automobile cap screw drilling machine recently perfected by the H. H. Franklin Manufacturing Company, Syracuse, N. Y.

The above illustration shows a machine that allows one man to do the work of four. Its purpose is to drill holes in cap screws and it can drill 2,000 of these in a working day. The machine was designed and constructed entirely within the Franklin company's tool department. Formerly it took four machines to drill a cap screw. Each of these machines drilled but one hole at a time and it took 2 minutes to drill the holes in one cap screw. The new machine drills three cap screws at one time and will turn out more than three in a minute. This one machine is capable of taking care of all the cap screw drilling for the entire Franklin output. The turret holding the cap screws which is plainly shown in the illustration is capable of holding five at one time. There are three drills and each one drills a hole through the cap screw. After the hole has been drilled, the drill is automatically drawn out, the turret turns, bringing the cap screw into position for the next hole to be drilled. In this way the cap screw finally has a hole drilled by each of the three drills. After the third drill has been used the turret again turns and the cap screw is ejected automatically from the machine. All that the man who attends to the machine has to do is to insert a new cap screw in the hole after each one has been ejected. The turret revolves through an arc of 72 degrees each time to bring the cap screw into the correct position for the next drill. The cap screw itself turns through an arc of 120 degrees around its own axis as the three holes are spaced equally about its circumference. The turret is turned about by a cam which gives an entirely automatic motion to both the turret and to the cap screw. The ejection of the finished piece is effected by an automatic spring plunger. At the back of the turret there is a guide which holds the three cap screws in position.

CHALMERS Factory Addition—The cut on page 557 shows the site of the new Chalmers building, which will be a four-story reinforced structure. This building, which will take care of the inspection department and part of the final assembly, was commenced on August 1. It is expected that it will be ready for occupancy by November 15. It will have a floor space of 55,000 square feet.

American Capital Foreign Knight—American enterprise, capital, designs and manufacturing details, combined with foreign financial support, are to be big factors in the production of a new Knight-engined automobile in a modernly equipped factory at Turin, Italy. With cylinders cast en bloc, worm-driven rear axle, wire wheels, chain-driven gear box, electric lighting and electric self-starting systems, the Knight car made in Turin will feature innovations that are expected to make a big stir abroad.

New R-C-H Coupé Announced—The R-C-H Corporation announces a new coupé, built to accommodate three persons, the body being very roomy and handsomely finished. The standard R-C-H color scheme, red and black, is continued in the exterior finish, while the interior upholstering is a dark gray whipcord. Each window is provded with silk shades to match the upholstering. The body is mounted on the regular R-C-H 110-inch wheelbase chassis as in the touring car and long wheelbase roadster. The equipment includes five electric lights with 100-ampere hour Exide storage battery, 32 by 3½ non-skid tires, all around, Warner Autometer and demountable rims. On the rear deck is mounted a 26-gallon gasoline tank and a large trunk with a slip cover. With each car a patented locking tire holder and extra demountable rim is also furnished. Taken all in all, the new model is a car which, for both finish and per-

formance, can be relied upon to give consistent service and distinguished appearance under all sorts of conditions.

Canadian Top Manufacturer—Richiss & Paterson have commenced the manufacture of automobile tops at Saskatoon, Canada.

Rubber Company Builds Addition—The American Hard Rubber Co., College Point, N. Y., contemplates erection to its plant of a three-story brick addition costing $30,000.

To Manufacture Parts—The Columbus Auto Parts Company has located in Columbus, Ind. The purpose of the company is to manufacture automobile parts. Its capital is $250,000 and the principal members are F. H. Penfield, F. Goodwell, B. S. Dean and J. I. Handley.

Niagara Now Ready to Move—The Niagara Gasoline Motor Company has raised the remaining $4,000 which were necessary last week to provide the amount of $50,000 needed by the company for removing its plant. The factory is at present at Buffalo, but will soon be transferred to Dunkirk, N. Y.

New St. John Factory—A St. John, Canada, factory may be turning out automobiles by March 1. The Maritime Car Company has awarded the contract for the erection of the three large concrete buildings which will comprise this factory at Coldbrook, and the work is to be completed by the first of next February.

Detroit Steel Company's Addition—The Detroit Pressed Steel Company will soon commence operations on an addition to its plant, which is to be one story in height and measure 100 by 200 feet. The increased factory space will allow the concern to triple its output, which is said to be necessary, due to the rapidly increasing business.

Castings Company Erects Foundries—The erection of a foundry has been begun at Pontiac, Mich., by the Pontiac Auto Castings Company, composed of men from Detroit and Muncie, Ind. The company will engage in the manufacture of brass castings for automobiles and later iron and aluminum work will be added to the output. The company is capitalized at $15,000.

Indianapolis Improving Roads to Plant—In keeping with a promise made the company some time ago, the city of Indianapolis is improving the Crawfordsville road from Indiana avenue to the Emrichsville bridge across Fall Creek in order to provide a passable highway for the Prest-O-Lite Company on the way to the company's new plant near the Indianapolis Motor Speedway.

Jackson Canadian Factory Branch—The Jackson Automobile Company, Jackson, Mich., is reported to be considering the location of a Canadian branch of its factory in Bartonville, Ont. Peter Christopher, the Jackson agent in Hamilton, states he has heard talk of the possibility of this firm locating in Bartonville, but has had nothing definite from the company at Jackson, Mich.

Addition to Fire Engine Company—Plans have been completed and work is to begin at once on the new addition to the American-LaFrance Fire Engine Company, Elmira, N. Y. The annex is to be 100 feet long by 25 feet in width, total cost to be $10,000. Contract for the structure has been awarded the Johnson Concrete Co., Sayre, Pa. Orders have been issued to rush work on the building and have it completed in 60 days from date.

Sterling Automobile Company Organized—The Sterling Automobile Company, Pontiac, Mich., has been organized to manufacture six-cylinder automobile engines. The initial output will be taken by the Little Motor Car Company of Pontiac, Mich., which is preparing to place a six-cylinder machine upon the market next January. The new plant will be equipped with modern machinery made especially for the company. Local capital is invested in the enterprise and W. C. Durant is heavily interested. It is expected the company will be able to begin operations before the close of the present year.

Spring Company's Factory Additions—The Hess-Pontiac Spring & Axle Company, Pontiac, Mich., is constructing additions to its factory which will double the output. It is expected ultimately to arrange the factory so that the steel may come into it at one end and emerge as finished product at the other. At present the company enjoys the distinction of being probably the greatest manufacturer of automobile springs exclusively in the world.

Nine-Hour Working Day—The Aluminum Castings Co.'s two local plants in Niagara street and Elmwood avenue, Buffalo, N. Y., commencing on October 1 will put its entire business on a 9-hour basis. The original intention of the concern, according to Manager Adams, was to put the nine-hour day into effect on May 1, but the strike of the molders and coremakers in the plants prevented this. The company will continue to maintain a strictly open shop, as the officials believe this is the ideal way to pay high wages, thus giving every man opportunity to be remunerated according to ability and not to be paid stipulated salaries.

Overland's Fire Alarm System—What is claimed by fire insurance underwriters to be the most complete fire alarm system to be found in any manufacturing plant in this country is that recently installed throughout the Willys-Overland plant at Toledo, O. The installation of this system cost the organization $12,000. There are 82 alarm stations throughout the factory and offices. Over 25,000 feet of copper wire was necessary to complete the system and all of the wire was run through conduits. In connection with the fire alarm system is a well trained fire brigade composed of employees of the company. The headquarters of the system is in the new transformer building recently constructed inside the plant and by colored incandescent lights the location of any fire is immediately flashed on the lighting board.

Stegeman in New Plant—The Stegeman Motor Car Company, Milwaukee, Wis., manufacturing a line of commercial vehicles in 1 to 6-ton sizes, is now comfortably located in its new works in Bay View, Milwaukee. The general offices are at 606 Linus street. The new works give the company an annual capacity of 500 trucks, including motor fire and police apparatus, in which line the company has made remarkable progress. A campaign for new agencies has been started by President Oscar Stegeman. The company has been in business 3 years and until now was located at 1148-1172 Holton street.

Recent addition to the Chalmers factory in Detroit

Wear-Compensating Casing; Small and Very Useful Tool; New Toilet Case for Tourists; Construction of Klaxet; Double Insulation Plug; Oil Gauge for Fords; Applas Curtains

M and M Tire Casing

ANTICIPATING the wear a casing is bound to undergo, the M and M Tire Company, Inc., Trenton, N. J., has designed a casing, Fig. 1, in which the inner surface section of the tread portion is shaped convex. This form of the casing compensates for the wear in the following manner: As the tread wears off, the convex section is pressed outward by the inflated inner tube and gradually assumes a flat and then a concave surface. The convex side portions of the casing are so designed in order to counteract flexure, which is very great along the side of the casing. The tire casing is made, according to its manufacturer, of the best grades of rubber and cotton fabric, and is guaranteed to last and serve for from 5,000 to 8,000 miles.

Morgan Combination Tool

B. Morgan, Newport, R. I., has devised a combination utility tool which is as simple in construction as it is manifold in possibilities of application. It consists of few, strong parts; a foot, an upright secured to it, a nut turning on the latter and located within a yoke which is a part of a movable clamp. This clamp and the foot are slotted. The nut is operated by a ratchet lever which works within an arc of 240 degrees. All parts except the nut, which is of brass, are made of hard steel. Among the numerous applications to which this tool may be put are those of a hand vise, drill jig, vulcanizing clamp, valve lifter, wrench or light jack. It is being manufactured in two sizes to fit the toolboxes on various cars.

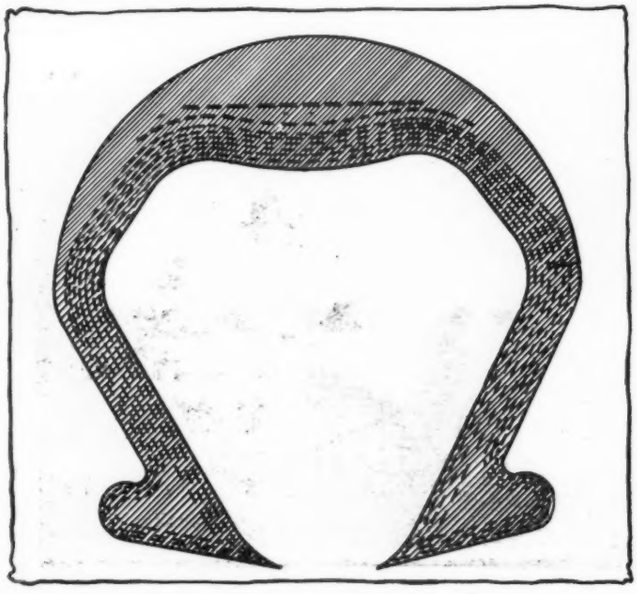


Fig. 1—Sectional view of wear-compensating casing

Bussert Automobile Toilet Case

To provide increased comfort for automobile tourists, T. J. Bussert, 5433 Russell avenue, Los Angeles, Cal., has constructed a portable toilet case, Fig. 4, which is attached to the running board of the automobile and contains whatever small articles are required by automobilists going on a tour lasting for several days. The case is a box which has a door hinged to one side of it, and when this door is opened a mirror hinged to the top front edge of the case becomes available. The latter may be locked in place by a screw moving in a guide. The back wall of the box has two interior extensions dividing it into three compartments, the upper and lower of which provide spaces for useful small accessories. The middle compartment is filled by a water tank W from which the water is taken

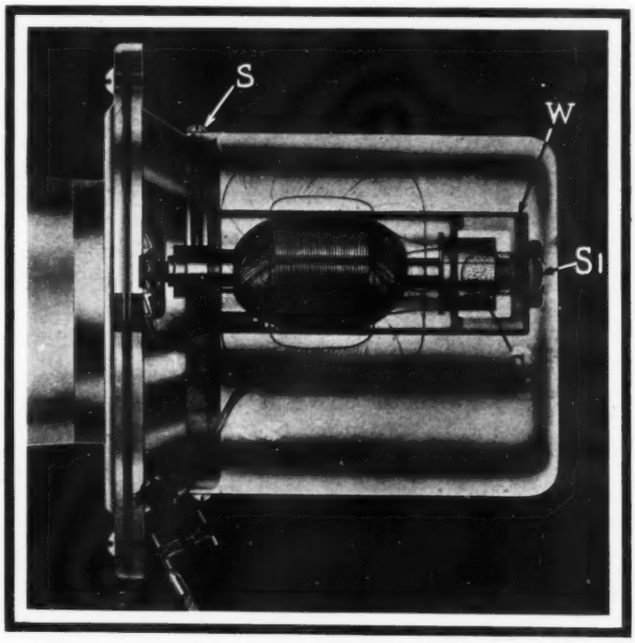


Fig. 2—Phantom view of new Klaxet electric signal

through a small cock. To the wall of the lower compartment a board is so hinged that it may be put in place horizontally to provide a base for the washbasin B which, when the case is not in use, is secured to the tank by hooks.

Details of Klaxet Horn

In the July 4 issue of THE AUTOMOBILE we announced the latest type of electric horn of the Lovell-McConnell Manufacturing Company, Newark, N. J., which has since been named the Klaxet, to indicate its relationship to Klaxon and Klaxonet. The Klaxet is somewhat smaller than either of these horns,

but works on the same principle, viz., the motor-driven ratchet wheel striking a steel button while rotating at high speed. The accompanying ghost view of the Klaxet, Fig. 2, brings out the principal points of difference between it and the other types. The motor is practically identical with that of the Klaxonet, but while in the latter it is mounted under an angle of 30 degrees to the horizontal, the Klaxet motor has its axis disposed horizontally in the casing, which is thereby made lower. The other changes are minor and along the line of simplification, a number of details and refinements of the larger types having been modified to that extent. In Fig. 2 C is the motor commutator and S1 the screws by means of which the pitch of the sound is adjusted. The oil wells for lubricating the mechanism are shown at W, Fig. 2, and the shell at S. The

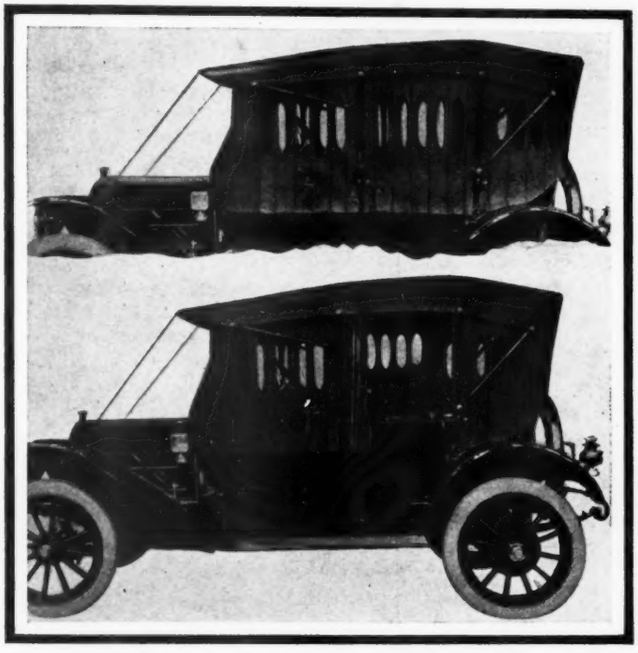


Fig. 3—Applas automobile curtain operated from inside

casing is attached to the collar surrounding the diaphragm by a series of screws indicated in white in the illustration. The binding posts are also shown in the figure.

Short-Circuit-Proof Plug

The H. W. Johns-Manville Company, Madison avenue and Forty-first street, New York City, has just brought out a new spark-plug which, judging from its construction, appears to be absolutely proof against short-circuits. It is the J-M plug, which consists of a sheet-steel shell, a platinum-iridium alloy electrode and a double insulation. Around the electrode seven sheets of mica are arranged and these again are encased in a layer of porcelain to insure double insulation. To provide non-leaking joints asbestos rings are used for packings.

Eclipse Gauge for Ford Cars

Owners of Ford cars who desire to install a glass gauge on the crankcases of their cars, to enable them to tell at a glance the level of the oil in the base chamber, can now obtain an accessory suited to their requirements. This device is the Eclipse gauge of the Emil Grossman Company, 250 West Fifty-fourth street, New York City, shown in Fig. 5. It is 3 1-2 inches long and 1 inch thick and consists of a thick glass tube held in a brass cup at each end. The lower cup is threaded for 1-4-inch pipe at two diagonally opposite points; the upper cup is bored with a small vent and both cups are held together by a long screw. In installing the gauge the lower petcock is removed from the crankcase and a short piece of 1-4-inch

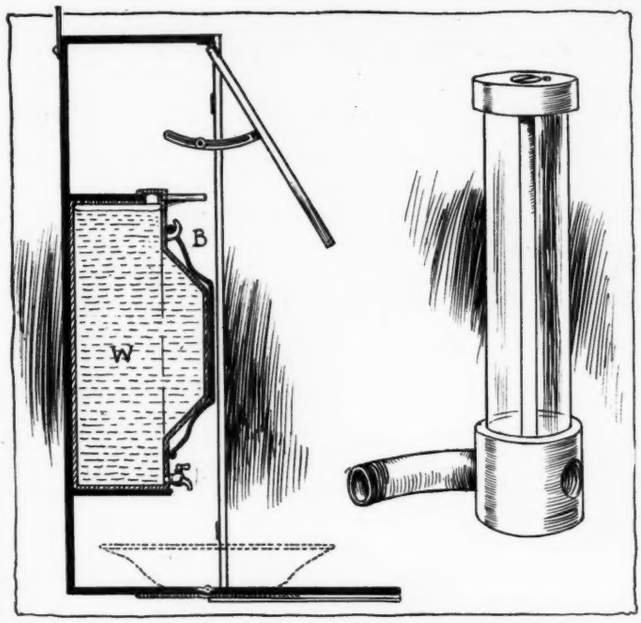


Fig. 4—Bussert automobile tourists' toilet case. Fig. 5—Eclipse oil gauge for Ford car crankcases

pipe, which is furnished with the gauge, is inserted in its place, while the petcock is screwed into the opposite thread of the lower cup which in turn is screwed onto the short piece of pipe. The level of the oil in the crankcase should be such that the lubricant stands 1 inch high in the gauge.

Applas Automobile Curtains

A new type of side curtain which may be opened and closed from inside the car while it is running is the design made by the Applas Curtain Company, 601 Ford Building, Detroit, Mich. This curtain consists of a series of accordion pleats of waterproof material, each of which is provided with a vertical celluloid window. The tops of these pleats slide on nickel-plated rods, one of which is fastened to each side of the top, and when the curtains are to be put out of use the pleats are shoved together, the rods are snapped to them and the whole equipment is attached under the flat portion of the bow of the car top. The bottom ends of the curtain pleats are secured to the inside of the body by knobs.

Electro Auto Duster

Under the name of Electro Dust-Absorbing Duster the Consolidated Sales Company, of Glens Falls, N. Y., sells a fabric which is said to be adapted for cleaning the surface of the automobile of dust and like impurities as quickly as it is brought in touch with them. The duster consists of a fine grade of cloth impregnated with a dust-absorbing chemical not only collecting but also holding the dust, so that in using this cloth one need not dirty one's hands as when an ordinary dust-cloth is used. The same cloth may be used for cleaning all portions of the car, although the maker recommends that one cloth be applied in cleaning the body and another for the very dirty parts, such as the wheels, mudguards, etc.

Auto Vacuum Suction Cleaner

The Auto Vacuum Cleaner Company, Milwaukee, Wis., has devised a very practical device for cleaning the upholstery, etc., of the automobile with the exertion of any power. The apparatus is a vacuum cleaner which consists of a suction nozzle adapted to be clamped to the muffler. The pressure of the gases rushing out of the muffler and passing through the nozzle produces a suction and exhaust the air surrounding it, which in turn exhausts a hose through which the dust from the upholstery is ejected.

Patents Gone to Issue

AUTOMOBILE Tire Tread Grip—Being of the anti-skid chain type.

This patent relates to a tire grip. Fig. 1, which is composed of two parallel chains encircling the tread and supporting its two sides. The chain links are twisted to the right and left sides, respectively, and spaced by rigid links connecting opposite chain links. The length of the chains is adjustable by lengthening or shortening the sectional side chains which are arranged on the sides of the tire to hold the grip chains.

No. 1,035,586—to Carlton L. Hoff, York, Pa. Granted August 13, 1912; filed June 15, 1910.

Sleeve-Valve Two-Cycle Motor—In which a rotating sleeve opens and closes the cylinder ports.

The subject matter of this patent a two-cycle sleeve valve motor, is shown in Fig. 2. It consists of a cylinder C, bolted to a crankcase C1, and forming with the latter a gastight chamber which may be made to communicate with the interior of the cylinder through the passage P. The cylinder has ports Q1 and Q2 for inlet and exhaust, respectively, which may be placed in or out of communication with the combustion chamber by the sleeve valve S. The latter is carried inside the cylinder and does not move up or down, but it is rotated by a worm W carried by the piston P1 and engaging a nut member formed on the sleeve.

No. 1,035,600—to Charles C. Keyser, Pensacola, Pa. Granted August 13, 1912; filed December 22, 1911.

Process of Making Artificial Rubber—Which consists in heating certain organic compounds in the presence of inorganic condensing agents.

This patent describes a process for making artificial rubber by heating a drying oil, for instance, wood oil, with amido derivatives of aromatic hydrocarbons together with a condensing agent, such as chloride of zinc.

No. 1,037,158—to Leon Lilienfeld, Vienna, Austria. Granted August 27, 1912; filed June 17, 1910.

Transmission Mechanism—In which the driving gears are carried by sleeve which may be locked on or left out of engagement with the shaft on which it is mounted.

In the transmission, Fig. 3, the gears are carried by a driving shaft D and a driven shaft D1 and incased in a housing C. The driving gears are carried by a sleeve S, slideable on the shaft and capable of frictionally engaging the same by the operation of a clutch C1. The driven gears may be selectively brought to mesh with the driving ones. Shifting of gears as well as engagement and disengagement of the clutch are brought about by the operation of a set of rocker arms.

No. 1,035,152—to Leon J. Campbell, Chicago, Ill. Granted August 13, 1912; filed January 23, 1911.

Automobile Suspension Design—By means of which extremely low placing of the center of gravity may be obtained.

In this patent an automobile, Fig. 4, comprises a body and running gear. The lower portion of the body has sills S, secured to it, each of which carries a pair of upright guides U, between which the axle A is adapted to travel, the uprights having their upper ends connected to the upper series of a set of elliptic springs S1. Near its end the axle is fitted with clamps supporting rods; the ends of the rods carry rollers which contact with the inner, opposing faces of uprights U and permit the axle to vertically reciprocate between them and remaining in alignment with the guides.

No. 1,035,461—to Alva Montel, Claypool, Ind. Granted August 31, 1912; filed March 21, 1912.

Tire Carrying Device—In which open annular brackets are revolubly mounted on supports.

This patent relates to a tire holder, Fig. 5, which consists of two depending members D, which are mounted on a supporting frame and in which adjustable brackets B are carried. The latter are provided with tubular portions which horizontally project from it and through which arc-shaped members A extend; the latter are revoluble in the tubular projections so that they may carry the tire not in alignment with the brackets B, but at an angle thereto.

No. 1,036,020—to Andreas M. Sonnichsen, Milwaukee, assignor to Auto Parts Manufacturing Company, Milwaukee, Wis. Granted August 20 1912; filed August 31, 1911.

Correction—In the July 18 issue of THE AUTOMOBILE, the address of Elmo L. Wright and Thomas M. Biossat, inventors of the differential gearing described in patent No. 1,032,261 was given as Lafayette, Ind., due to an error. The correct address is Lafayette, La.

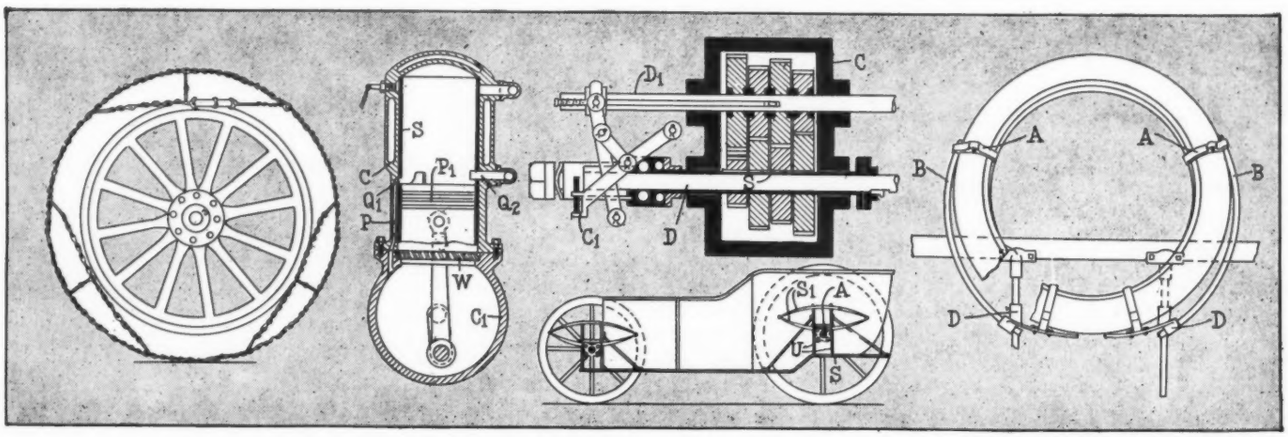


Fig. 1—Hoff tire chain. Fig. 2—Keyser motor. Fig. 3—Campbell gearset. Fig. 4—Montel suspension. Fig. 5—Sonnichsen tire carrier